PERSONHOOD 2.0: ENHANCED AND UNENHANCED PERSONS AND THE EQUAL PROTECTION OF THE LAWS

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I. INTRODUCTION

It turns out that persons are in various ways upgradeable. But what if some formerly roughly equal persons are dramatically upgraded in their basic capacities, while others are not? How should our most basic law, in particular the principle of the equal protection of the laws, control the phenomenon of unequal dramatic human enhancement? The philosopher Rousseau famously took persons as they were, and on that assumedly unchanging basis, considered dramatic changes in the basic law.[1] Current and future technological advances of various sorts, however, raise an opposite and at least equally important question: if we take the equal protection of the laws[2] seriously, how should we react to the prospect of a society eventually divided into dramatically enhanced and unenhanced persons?[3] This Article takes up the latter question.

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1. *See* JEAN JACQUES ROUSSEAU, THE SOCIAL CONTRACT 49 (Maurice Cranston trans., Betty Radice & Rober Baldick, eds., Penguin Books 1968) (1762). But "[a]s our powers over nature increase, we are bound to become less interested in what men are, and more interested in what we make them to be." JOHN WILSON, EQUALITY 49 (Harcourt, Brace & World, Inc. 1966).

2. Other elements of the Federal Constitution may well bear upon human enhancement, particularly through genetic or other intimate means. For some examples, *see, e.g.*, Michael H. Shapiro, *Does Technological Enhancement of Human Traits Threaten Human Equality and Democracy?* 39 SAN DIEGO L. REV. 769, 838-39 (2002) (citing even the Constitution's Nobility Clause).

3. Reference to the ways in which technologically enhanced and unenhanced persons are 'unequal' is of course not intended to suggest that enhanced persons are worthier than unenhanced persons. Nor do we mean to deny that 'enhancement' is

There are actually two reasons for addressing this question. First, we may need all the lead time we have for thinking about how a society of technologically enhanced and unenhanced[4] persons may be a profoundly divided society, or may otherwise raise crucial problems of equal protection. And second, it is certainly possible that thinking about equal protection in extreme contexts to which we bring few preconceptions can allow us to think more clearly about equal protection itself, generally and in more familiar contexts.

In carrying out our inquiry, section II below introduces the controversial distinction between therapy and enhancement and introduces as well several possible forms of human enhancement. Among these are human growth hormone and other advanced pharmaceuticals, injectable muscle-growth factor, electroactive polymer technology, brain and other body implants and their possible connectivities, nanotechnology in several forms and the body, and various genetic-based human enhancement techniques. A brief introduction to some issues of consent and inequality, the changing costs of enhancements over time, the breadth and depth of relevant inequalities, and even of the possible breakdown of general solidarity and commonality along caste-like lines, concludes the section.[5]

The following section III then pursues possible enhancement technology cost-reduction scenarios and their potential effects on inequality, and more fully explores the ideas of equality and inequality in the context of human enhancements. Equality and happiness or well-being are distinguished, and the idea that equality is necessarily a relative or comparative matter is introduced. Section III then illustrates how human enhancement technology can blur traditional crucial distinctions, including those between free if risky choice and sheer brute luck; ambition-sensitive achievements versus a person's "mere" endowment-based achievements; personal capacities versus one's

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largely a cultural construct, or to rule out the possibility that some advanced forms of human enhancement may carry dignitary costs or lead the enhanced persons into worse choices than they might otherwise make.

4. The formula of enhanced and unenhanced persons is adopted here for the sake of simplicity. However we wish to identify an enhancement, doubtless persons will be enhanced or unenhanced as a matter of degree. This will be true with respect to overall enhancement as well as enhancement along any specific dimension. While all persons may be placed at one point or another on a continuum of enhancement, the same might be said about wealth and poverty. This fact by itself hardly rules out social divisions either between the extremely rich and the extremely poor, or between exceptionally enhanced and unenhanced or minimally enhanced persons.

5. *See infra* section II.

circumstances or environment; natural or cosmic "injustice" and the results of politics and economic systems; and even between transferable and non-transferable "personal" assets.[6]

Section III then notes the potentially crucial effects on future descendants of an ancestor's free or unfree choices, including the possible problems and benefits of a late adoption of enhancement technology. The section concludes with specific consideration of "cumulativity" problems, in which various sorts of crucial inequalities are jointly reinforced and compounded by the crucial enhancement technologies.[7]

Section IV discusses several meanings, forms, and spheres of equality and equal protection. Equal protection as impartial governance, or as government distinctions drawn only on relevant grounds, sets the stage for consideration of more elaborate equal protection theories variously emphasizing anti-discrimination, anti-differentiation, anti-subordination, and anti-caste principles. The distinction between formalistic and substantivist approaches to equal protection is then introduced[8] in the context of what amount to caste-like divisions between technically enhanced and unenhanced persons.

The concluding section V pursues the above formalistic versus substantivist equal protection distinction by addressing some well-known Supreme Court equal protection cases. The cases illustrate, respectively, what we will call a reductivist formalist approach to equal protection; a rigorist formalist approach to equal protection; and, in our context, a much preferable substantive realist approach to equal protection.[9]

Section V, and the Article as a whole, concludes with a specific discussion of substantive realism in equal protection as applied in the human enhancement context. Excessively intrusive solutions, as well as tax or penalty-based solutions that focus unduly on 'leveling down,' as opposed to 'leveling up,' should be rejected. Instead, the crucial linkages between meaningful, substantively-understood equal protection on the one hand and social commonality, genuine communication, solidarity, and meaningful democracy on the other should be re-affirmed.[10]

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6. *See infra* section III.
7. *See id.*
8. *See infra* section IV.
9. *See infra* section V.
10. *See id.*

II. HUMAN ENHANCEMENTS AND THE FUTURE PROBLEMS OF EQUAL PROTECTION

Few persons would prefer a society so severely divided into technically enhanced and unenhanced "ordinary" persons that serious issues of equal protection become inescapable. How, then, might such a dramatically divided society arise? Many uncertainties must attach to any scenario we can imagine. What seems technically unlikely today may seem just the opposite tomorrow, and vice versa. It would be foolish to place too much weight on the accuracy of any single scenario, however vague, and however currently plausible.

Consider almost at random, then, this possible starting point: injections of a human growth hormone drug have been made available to unusually short children whose shortness of stature results not from a shortage of their own natural growth hormone or from any disease.[11] The long-term treatments are available for boys likely to be shorter than 5'3" and girls likely to be shorter than 4'11" as adults.[12] The resulting average gain in height is expected to be between 1.5 and 2.8 inches.[13]

Such current techniques already raise concerns,[14] even though the results of the injections are not inheritable by the patient's future descendants, and the purpose of the injections is to approach statistically "normal" height, rather than enhance an already statistically normal characteristic.

Initially, the use of human growth hormone is thus in a sense reducing an existing inequality, rather than creating or increasing an inequality.[15] And the inequality is being reduced by moving some, though hardly all, of those in the bottom half of the distribution upward, rather than by reducing anyone's height in the top half of the distribution.

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11. The Associated Press, *A Hormone to Help Youths Grow is Approved by the F.D.A.*, N.Y. TIMES, July 27, 2003, *available at* http://www.nytimes.com/2003/07/27/science/27HORM.html (last visited July 27, 2003).

12. *See id.*

13. *See id.*

14. *See id.*

15. Only a limited number of short children are eligible for the treatment, and we do not know whether they include many of the very shortest. This makes a difference, as one could reasonably argue that moving persons other than the very shortest toward the middle of the height distribution increases equality in a sense, but also increases inequality, in that it increases the statistical isolation or "extremity" of the very shortest. For discussion of a variety of similar problems, see LARRY S. TEMKIN, INEQUALITY (Oxford Univ. Press 1993).

Thus one could characterize the program as one of increasing equality,[16] and as therapeutic, or as "restorative" of some perceived "deficiency." Holding this line, however, is likely to eventually prove extremely difficult in practice. There may, in this example or in some other kind of case, be no technical impediment[17] preventing similar technology from increasing the height of an already tall child for basketball scholarship purposes.[18] Other tall children with competitive[19] parents, after all, may already be receiving treatments, or at least be rumored to. In the face of sometimes reluctant parental demand,[20] murky conceptual distinctions,[21] and practical enforcement problems,[22] the line between therapy and enhancement, even if it is clear in some theoretical sense, may not be maintainable in practice.[23] Maintaining

16. *But cf. id.*

17. *See* Mark S. Frankel, *Inheritable Genetic Modification and a Brave New World: Did Huxley Have It Wrong?* 33 HASTINGS CENTER REPORT 31, 33-34 (2003) ("the technology developed for therapeutic purposes will be the same as that used for enhancement"). As well, even "distinguishing between treatment and enhancement may get increasingly difficult." *Id.* at 34.

18. *See id.*

19. While some qualities are useful mainly to the extent that other persons do not possess them to the same degree, others, such as human resistance to disease, are of value even if—or especially if—they are also possessed by others. The collectively self-defeating sorts of enhancements are discussed in ALLEN BUCHANAN ET AL., FROM CHANCE TO CHOICE: GENETICS AND JUSTICE 182-87 (2000).

20. *See, e.g.*, Frankel, *supra* note 17, at 34 (discussing parental affection, concern, and ambition on behalf of their children); Jason C. Glahn, *I Teach You the Superman: Why Congress Cannot Constitutionally Prohibit Genetic Modification*, 25 WHITTIER L. REV. 409, 437 (2003) ("[c]ritics might claim that the government has additional interests such as an egalitarian desire to prevent the growth of a genetic gap . . . . The response to such arguments is . . . [that] [t]here is no historical pedigree and no case law that establish such countervailing interests as serious challenges to the rights of parents").

21. *See, e.g.*, Frankel, *supra* note 17, at 34. Even if the distinctions at issue could be clarified, it is far from clear that after the unfamiliarity wears off, along with any sense of "unnaturalness," much of the public will draw principled distinctions among traditional orthodontics as therapy, cosmetic dental implants; orthodontics beyond mere therapy; or creating more attractive teeth by non-threatening genetically-based means. This is not to say that the public will want to subsidize all of the above, or will want them all treated the same for government or private insurance purposes.

22. *See, e.g.*, Lee M. Silver, *Reprogenetics: Third Millennium Speculation*, 1 EUROPEAN MOLECULAR BIOLOGY ORG. REPORTS 375, 378 (2000) ("the innate desire to advantage one's children is so powerful that affluent citizens may buy reprogenetics elsewhere even if their society bans or limits it use—just as Europeans now travel to the USA to purchase human eggs from selected donors"). Of course, some imaginable illegal "upgrades" may be readily proven to be illegal.

23. *See, e.g.*, Frankel, *supra* note 17, at 34; Jon W. Gordon, *Genetic Enhancement in Humans*, 283 SCIENCE 2023 (March 26, 1999) (referring to "the general belief that voluntary abstention from germ line modifications in humans is unlikely"); Leon R.

the line will be even more difficult when enhancements more crucial and more socially valuable than height, such as disease resistance, bone strength, or various general mental abilities are at stake.[24]

We should expect similar reactions, once the shock of novelty wears off, to other enhancement technologies. Admittedly, some such technologies may be collectively self-defeating,[25] or may even undermine the interest value of the activity in question, as perhaps in the case of some sports performance enhancers. But if a technology can enhance competitive performance,[26] at an acceptable risk of detection[27] or of serious medical side effects, we may expect its use as long as the stakes are sufficiently high.

One possible such technique, developed originally as a therapeutic treatment for muscle-wasting disease or for muscles weakened through advanced age,[28] may also benefit competitive athletes at any level. The particular technique "uses a gene for insulin-like growth factor which when injected with a virus into a muscle becomes incorporated into the genes of the muscle tissue causing them to grow."[29] For the particular technique in question, only one injection may be necessary,[30] but the actual enhancement effects on already healthy muscle tissue remain to be definitively established,[31] and potentially serious adverse health effects clarified.[32]

Kass, *The Moral Meaning of Genetic Technology*, 108 COMMENTARY 32 (Sept., 1999) (recognizing the practical indefensibility of a line not only between gene therapy on existing people and germ-line modification, but between gene therapy and genetic enhancement) (asking rhetorically in particular "will we deny prospective parents the right to enhance the potential of their children?"); Mark A. Hall, *Genetic Enhancement, Distributive Justice, and the Goals of Medicine*, 39 SAN DIEGO L. REV. 669, 674-78 (2002) (discussing the therapeutic versus enhancement distinction).

24. *See* Kass, *supra* note 23 (discussing examples of such possibilities).

25. *See supra* note 19. An enhancement that merely allows one to, by loose analogy, stand up to see better at a football game loses its value entirely if all or most other spectators in front have also purchased the same enhancement, so that most or all of the crowd is standing, but now enjoying no better view than formerly.

26. *See, e.g.*, Steven Connor, *Gene Therapy Could Help Athletes Cheat, at* http://news.independent.co.uk/low_res (February 17, 2004). For a sense of the shifting non-genetic baseline, see Allan H. "Bud" Selig & Robert D. Manfred, Jr., *The Regulation of Nutritional Supplements in Professional Sports*, 15 STAN. L. & POL'Y REV. 35 (2004).

27. *See supra* note 26.

28. *See id.*

29. *Id.*

30. *See id.*

31. *See supra* note 26. The same investigator, Dr. H. Lee Sweeney, has produced dramatic and long-term muscle effects in mice. "The mighty mice looked like a different animal. They were built like cattle with thick necks and big haunches. They

It is important at this point to remember that our equal protection argument does not rely on any single scenario or any single kind of path to human enhancement. The genetic injection into muscle technique doubtless has risks and limits of various sorts, even when refined or combined intelligently with other enhancement techniques of far different sorts. Nor can we even begin to tell which specific enhancement techniques have the most dramatic long-term potential, alone or in combination, or which sorts of obstacles will prove either lesser or greater than they currently seem.

Merely as one alternative, then, we might briefly consider the possibility of electroactive polymers as a route to, or substitute for, enhanced arm strength. In particular, Yoseph Bar-Cohen of the NASA Jet Propulsion Laboratory has issued a challenge to construct a non-metallic robotic arm,[33] of arm-wrestling strength, composed of electroactive polymers capable of bending, flexing, contracting, and twisting in response to electric charges.[34] While it is unlikely that many persons of ordinary strength would be disposed to swap their familiar sorts of limbs for polymer limbs of roughly equal capacity, it is less easy to rule out our adopting some further more sophisticated development of this technology, in some contexts.

More dramatic are the technical and the equal protection implications of future generations of brain and other sorts of body implants.[35] With some sorts of advanced brain implants may come

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belonged in some kind of mouse rodeo." Michael Sokolove, *The Lab Animal*, (2004), *at* http://www.nytimes.com/2004/01/18/magazine/18SPORTS.html. For further discussion, see H. Lee Sweeney, *Gene Doping*, 291 SCIENTIFIC AMERICAN 62 (July 2004). For a loose "natural" genetic analogue, see *Gene Mutation Makes Tot Super Strong*, CNN.com (June 24, 2004) *at* http://cnn.com/HEALTH (inherited DNA segment blocks production of the protein myostatin that would limit muscle growth; uncertainty as to any future health problems), as well as the more technical discussions of Elizabeth M. McNally, *Powerful Genes—Myostatin Regulation of Human Muscle Mass*, 350 NEW ENG. J. MED. 2642 (June 24, 2004) and Markus Schuelke, et al., *Myostatin Mutation Associated With Gross Muscle Hypertrophy in a Child*, 350 NEW ENG. J. MED. 2682 (June 24, 2004).

32. *See* Connor, *supra* note 26 (potential risks could include "increased heart problems and possibly cancer").

33. *See* Cari Beth Head, *Meet the Artificial Muscle Man*, (2003), *at* www.cnn.com/2003/TECH/ptech/10/09/popsci.muscle.man.

34. *See id.*

35. *See* Justin Pope, *FDA Approves Human Brain Implant Devices*, ASSOCIATED PRESS, *at* http://story.news.yahoo.com/news?tmpl=story&u=/ap/20040413/ (Cyber-Kinetics firm of Foxboro, Mass. beginning clinical trials of implanted four square millimeter chips conceivably at some point allowing persons "to command a computer to act—merely by thinking about the instructions they wish to send"). For a much

extremely efficient and powerful interfaces between brains and external computers.[36] Consider a possible future in which a few or even a majority, but not all, adults are able, through some combination of advanced technologies, to process information with the speed of today's Google, but with far greater incisiveness, focus, discretion, judgment, and practical wisdom. The remainder of the adult population, the unenhanced, would realistically be in no position to compete for the corresponding number of appealing jobs, or for genuine political and economic influence.

Human capacities may be dramatically upgradeable through a variety of other technologies, some genetically focused, and others not genetically focused. One possibility of the latter variety lies in incorporating sophisticated nanotechnology, perhaps in the form of nanobots, or robots on an extremely small physical scale, into human functioning. The idea has been raised, for example, that "[i]nstead of having red and white blood cells floating through your veins, some 500 trillion . . . nanobots would fill the entire vasculature of the body, some lining the blood vessels and some swarming through them."[37] Again, and especially in combination with advanced genetic or other technologies, there arises the possibility of increasing basic inequalities if such technologies are not adopted universally.

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broader, deeper, and more speculative excursion along these developing lines, see ANDY CLARK, NATURAL-BORN CYBORGS: MINDS, TECHNOLOGIES, AND THE FUTURE OF HUMAN INTELLIGENCE (2003).

36. *See* the sources cited *supra* note 35.

37. James M. Pethokoukis, *Roboblood*, U.S. NEWS.COM (Aug. 8, 2003), *at* http://www.usnews.com/usnews/nycu/tech/nextnews/archive/next030808.htm (raising the prospect of not only disease prevention, but of "significantly improving physical endurance and stamina," along with greater resistance to accident and injury). For some initial exploration of possible risks of some similar uses of nanotechnology, see Rick Weiss, *For Science, Nanotech Poses Big Problems*, THE WASH. POST, Feb. 1, 2004 ("nanoparticles can make their way from a rat's throat into its brain, apparently through the nasal cavities and olfactory bulb"). For a broader overview of possible problems and prospects of human enhancement through nanotechnology, see, e.g., STEPHEN WOOD ET AL., THE SOCIAL AND ECONOMIC CHALLENGES OF NANOTECHNOLOGY (Economic & Social Research Council 2003). For some possible lines of convergence or symbiosis between nanotechnology and advanced forms of pharmaceuticals, see, e.g., Zack Lynch, *Think Nano Has Ethical Problems? Just Wrap Your Brain Around Neuro*, *at* http://www.smalltimes.com/document_display.cfm?document_id=7522 (July 7, 2004) (discussing competitive advantages potentially available through advanced "neuroceuticals"); Jack Mason, *Melding of Nano, Bio, Info and Cogno Opens New Legal Horizons*, *at* http://www.smalltimes.com/document_display.cfm?document_id=7501 (July 7, 2004) (neuroceuticals as the future anticipated result of "biochips and brain imaging").

Increasing inequalities in basic capacities can take the form of expensively preventing familiar forms of disease. Invulnerability to some forms of disease or accident may become an important advantage. Thus some enhancements may preclude bad possibilities, while others may promote positive achievements. Neither form of enhancement can be without risk. Some enhancements may prove to be only expensive routes to results achievable by less expensive means. Others may have severe adverse side effects, by themselves or when combined with other technologies. Some forms of enhancement may have insufficient payoff to cover their purchase costs. Of course, other technologies of enhancement may develop fewer serious problems than anticipated, or may even operate synergistically with other enhancement technologies. Prices and practical limits may surprise us, favorably or unfavorably, and they may change over time at surprising rates.

The prices of enhancements, and the rates at which those prices change, will be important to the severity of the related inequalities, and to questions of equal protection of the law. Nanotechnology in general has already been cited as a possible future source of increasing inequalities between rich and poor,[38] assuming differences between higher and lower income persons in their realistic access to such technology.[39]

Even more intriguing are the problems posed by various kinds of genetic enhancements.[40] On its face, the idea of inheritable genetic[41] enhancement seems to open possibilities that are broader, more dramatic, and more profound than do other forms of human enhancement.[42] Potentially, genetic enhancements, perhaps in combination with other forms of enhancements, could lead not only to utterly caste-like inequalities, but even beyond caste to social and

38. *See* WOOD ET AL., *supra* note 37, at 34.

39. *See id.*

40. *See, e.g.*, Michael J. Sandel, *The Case Against Perfection*, 293 ATLANTIC MONTHLY 51 (April, 2004); Michael J. Sandel, *What's Wrong With Enhancement?* THE PRESIDENT'S COUNCIL ON BIOETHICS (2002), *at* http://www.bioethics.gov/background/sandelpaper.html.

41. While our focus will be on inheritable genetic enhancements, not all genetic alterations, in a broad sense, are inheritable. "[A]ny genetic changes to somatic cells cannot be passed onto future generations. Changes, on the other hand, to germ-line cells can indeed be passed onto children and to succeeding generations." MICHAEL J. REISS & ROGER STRAUGHAN, IMPROVING NATURE?: THE SCIENCE AND ETHICS OF GENETIC ENGINEERING 202 (1996).

42. *See* the sources cited *supra* note 40.

biological partition, unbridgeable separation, and civic unconnectedness among groups and generations.

This is not to suggest that the path to the successful technical development and public availability, legal or illegal, of genetic enhancements will be smooth. Certainly, we will not be able to unscrew a single gene governing any valuable quality and replace that gene with a uniformly better single gene, at little biological cost. Consider the strictures of a contemporary philosopher:

> [E]ven if we could isolate specific genes that are associated with gifts such as musicality (which we cannot) . . . this [would] be insufficient to secure their successful replication. Were we to locate such a thing, its isolation and insertion would be a hazardous undertaking, with quite unpredictable results. The interrelations of genes are simply too complex to make plausible efforts of this kind. Besides, we know that DNA is not the only agent in biological development. . . .The aspiration to designer babies, then, is an impossible dream. . . .[43]

Nor can we always expect to control genetic influences on human capacities by focusing very narrowly on genes themselves. The influence of what we think of as genetics may actually be partly a matter of interactions[44] between genes and environment. Genes may themselves respond to,[45] and alter their functioning in response to,[46] their nurture or environment.

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43. GORDON GRAHAM, GENES: A PHILOSOPHICAL INQUIRY 173 (2003). *See also* Nicholas Wade, *Should We Improve Our Genome?*, N.Y. TIMES, Nov. 11, 2003, at Science Times section, *available at* http://www.nytimes.com/2003/11/11/science/11GENO.html ("many genes have more than one effect, and swapping out the bad version of a gene can have unpredictable complications. The new gene, for example, may interact badly with the person's other genes").

44. *See, e.g.*, Rick Weiss, *Gene's Sway Over IQ May Vary With Class*, THE WASH. POST, Sept. 2, 2003, at A1 ("the emerging view allows that genes can influence the impact of experiences and experiences can influence the 'expression,' or activity levels, of genes").

45. *See, e.g.*, Sandra Blakeslee, *A Pregnant Mother's Diet May Turn the Genes Around*, N.Y. TIMES, Oct. 7, 2003, at F1, *available at* http://www.nytimes.com/2003/10/07/science/07GENE.html ("a mother's diet can permanently alter the functioning of genes in her offspring without changing the genes themselves").

46. H. Allen Orr, *What's Not In Your Genes: Review of Matt Ridley, Nature Via Nuture: Genes, Experience, and What Makes Us Human*, 50 N.Y. REV. BOOKS, Aug. 14, 2003, *available at* http://www.nybooks.com/articles/16522 ("study of the human genome has revealed that genes respond to experience").

These sorts of complications, however, are for our purposes inessential. If safe and valuable genetic enhancements become available, some parents, perhaps after a period of desensitization, will embrace or feel competitively bound to embrace[47] such technologies. The moral controversiality of such technologies,[48] and even their legal prohibition within a given jurisdiction,[49] may not be of decisive weight.[50]

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47. The philosopher Jonathan Glover has noted that some adoptions of genetic technology might not be entirely free. Glover notes that "parents might think their children would be more successful if they were more thrusting, competitive, and selfish. If enough parents acted on this thought, other parents with different values might feel forced into making similar choices to prevent their own children being too greatly disadvantaged." JONATHAN GLOVER, WHAT SORT OF PEOPLE SHOULD THERE BE?: GENETIC ENGINEERING, BRAIN CONTROL AND THEIR IMPACT ON OUR FUTURE WORLD 49 (1984).

48. Generalized moral critique of genetic enhancements is beyond the scope of our concern. For some of the most interesting and to this point influential, see, e.g., the sources cited *supra* note 40; LEON R. KASS, LIFE, LIBERTY AND THE DEFENSE OF DIGNITY: THE CHALLENGE FOR BIOETHICS (2002); JURGEN HABERMAS, THE FUTURE OF HUMAN NATURE 61 (2003) ("[e]ugenic programming of desirable traits and dispositions . . . gives rise to moral misgivings as soon as it commits the person concerned to a specific life-project or . . . puts specific restrictions on his freedom to choose a life of his own") (producing a relationship based on paternalism rather than communication and reappraisal); REISS & STRAUGHAN, *supra* note 41, at 222 ("[i]t can be argued that genetic engineering to enhance human traits diminishes the autonomy of the . . . genctically engineered child that results"); C.S. LEWIS, THE ABOLITION OF MAN 57 (Harper 2001) (1944) (use of such techniques as disempowering both the object-generation and preceding generations); ONORA O'NEILL, THE 'GOOD ENOUGH' PARENT IN THE AGE OF THE NEW REPRODUCTIVE TECHNOLOGIES, IN THE ETHICS OF GENETICS IN HUMAN PROCREATION 33, 43 (Hille Harker & Deryck Beyleveld eds., 2000) (raising the possibility of a new pattern of contingent parental commitment to offspring, dependent upon parentally anticipated performance levels); REISS & STRAUGHAN, *supra* note 41, at 221 (discussing John Mackie's argument that "if the Victorians had been able to use genetic engineering, they would have aimed to make us more pious and patriotic"). For interesting predictions on how genetic enhancements are likely to be used, see James Hudson, *What Kinds of People Should We Create?*, 17 J. APPLIED PHIL. 131 (2000). The above considerations pose general moral problems. We also set aside more specialized moral problems, such as those stemming from the creation of chimeras consisting of hybrids of humans and some other species. For discussion, see Nicholas Wade, *Stem Cell Mixing May Form Human-Mouse Hybrid*, N.Y. TIMES, Nov. 27, 2002, *available at* http://www.nytimes.com/2002/11/27/science/27CELL.html (discussing various exotic possibilities); DERYCK BEYLEVELD & ROGER BROWNSWORD, HUMAN DIGNITY IN BIOETHICS AND BIOLAW 164-66 (2001) (discussing the possible roles of sentience and agency in ascribing full moral status); Nicole E. Kopinski, *Human-Nonhuman Chimeras: A Regulatory Proposal On the Blurring of Species Lines*, 45 B.C. L. REV. 619 (2004). *See also* Rick Weiss, *Of Mice, Men and In-Between*, WASHINGTON POST, Nov. 20, 2004, at A1.

49. *See, e.g.*, LEE M. SILVER, REMAKING EDEN: HOW GENETIC ENGINEERING AND CLONING WILL TRANSFORM THE AMERICAN FAMILY 284 (1998) (assuming the practical

It is possible that genetic enhancement may raise no serious equal protection issues over the long term. In the meantime, we could certainly use genetic enhancement scenarios to increase our understanding of what equal protection really requires. This optimistic, and certainly controversial, perspective can take something like the following form:

> Almost every medical advancement at its beginning was available only to the rich. By refining these advancements and techniques prices dropped which opened up new markets for those less financially fortunate. In the end, procedures that were once cost prohibitive are now available to everyone. There is no reason to think that genetic enhancement procedures won't follow the same course.[51]

Or, as Professor Michael H. Shapiro controversially argues, "suppose that enhancement becomes legal, its use disclosed, its price relatively low, and its efficacy roughly the same for all. Then, whatever objections would remain, inequality concerns would be partially muted,

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unenforceability of significant legal restrictions on genetic enhancements generally); Lee M. Silver, *Reprogenetics: Third Millennium Speculation*, 1 EUROPEAN MOLECULAR BIOLOGY ORG. REPORTS 375, 378 (2000) ("the innate desire to advantage one's children is so powerful that affluent citizens may buy reprogenetics elsewhere even if their society bans or limits its use—just as Europeans now travel to the USA to purchase human eggs from selected donors"); Maxwell J. Mehlman, *The Law of Above Averages: Leveling the New Genetic Enhancement Playing Field*, 85 IOWA L. REV. 517, 565-68 (2000). *See* Mehlman, *supra*, at 566 ("[s]imilar to the War on Drugs and the effort to ban drugs in sports, restricting access to genetic enhancements to promote equality is likely to be extremely intrusive and expensive. Moreover, it is likely that a ban will not be completely effective"). We would expect the illegality of any valuable enhancement to tend to increase its price, which in turn may worsen the effect of such an enhancement on inequalities among persons.

50. In general it seems possible that a technique legally available for deficiency-preventive or deficiency-curative purposes may also tend, perhaps at higher doses, to promote extraordinary capability in other persons. Consider, perhaps, a next generation prescription drug intended to treat deficiencies of memory, or concentration, or even the ability to draw deductive inferences, that can be adapted to enhance statistically normal abilities as well. *See, e.g.*, Mehlman, *supra* note 49, at 566.

51. Adam D. Moore, *Owning Genetic Information and Gene Enhancement Techniques: Why Privacy and Property Rights May Undermine Control of the Human Genome*, 14 BIOETHICS 97, 117 (2000). But see the less optimistic, less egalitarian scenario envisioned in MAXWELL J. MEHLMAN & JEFFREY R. BOTKIN, ACCESS TO THE GENOME: THE CHALLENGE TO EQUALITY 88 (1998) (noting the likely unavailability for at least some time of insurance coverage, due either to high costs or the experimental nature of enhancements).

though remaining important because of enduring positional differences."[52]

Even Professor Shapiro's scenario thus assumes ongoing important problems of inequality. And some especially valuable technologies may remain at prices out of the reach of at least some small portion of the society for a length of time sufficient to confer a permanent and growing advantage on early adopters.[53]

Among the moderate optimists is the well-known public affairs writer Francis Fukuyama.[54] Fukuyama recognizes the possibility of "the emergence of new genetic classes."[55] But he also sees a more positive outcome as "entirely plausible."[56] This outcome would involve "an impetus toward a much more genetically egalitarian society."[57]

Crucially, though, Fukuyama does not see this egalitarian outcome as arising from the unregulated play of the relevant markets, including insurance markets, or from some irresistible technological imperative governing prices and availability. Fukuyama instead argues that "it seems highly unlikely that people in modern democracies will sit around complacently if they see elites embedding their advantages genetically in their children."[58] This seems to imply some sort of aggressively

52. Michael H. Shapiro, *Does Technological Enhancement of Human Traits Threaten Human Equality and Democracy?*, 39 SAN DIEGO L. REV. 769, 807 (2002).

53. It is also possible that in some cases, the price of new technology—covered by insurance or otherwise subsidized or not—could decrease so fast, and the quality and power of the technology could increase so fast that it would actually be the early adopters who lose ground to late adopters. This could be especially significant if the particular technology, once adopted, is difficult or risky to upgrade or replace with more advanced versions.

54. *See* FRANCIS FUKUYAMA, OUR POSTHUMAN FUTURE: CONSEQUENCES OF THE BIOTECHNOLOGY REVOLUTION 158 (2002).

55. *Id.*

56. *Id.*

57. *Id.*

58. FUKUYAMA, *supra* note 54, at 158. It is important to remember that competitive pressure to ensure that one's children are enhanced, whatever one takes the medical risks or the moral costs to be, amounts to a real limitation, in some sense, on parental freedom. *See* ALLEN BUCHANAN ET AL., FROM CHANCE TO CHOICE: GENETICS AND JUSTICE 185 (2000) (noting that some parents may want children of at least average intelligence, and view the enhancements necessary to reach the new average dictated by enhanced children as requiring a risky or costly choice). For a review of Allen Buchanan et al., see Mark A. Hall, *Genetic Enhancement, Distributive Justice, and the Goals of Medicine*, 39 SAN DIEGO L. REV. 669 (2002). Not all parents need accept the predominant understanding of what constitutes a genuine 'enhancement,' at least for their own children. Some parents may prefer 'disenhancement' for their offspring, given their own values and circumstances. *See, e.g.*, Martin Harvey, *Reproductive*

demanded public policy redress, perhaps even culminating in meaningful judicial decisions on genetic class disparities and the equal protection of the laws. Indeed, Fukuyama may even envision popular agitation and direct action in this regard well beyond tranquil democratic politics.[59]

Issues of free and knowledgeable consent by or on behalf of all the affected parties would inevitably arise. Some parents who could afford various sorts of dramatic enhancements for their current or future offspring may choose against such enhancements,[60] perhaps on sophisticated ethical or other philosophical grounds.[61] To the extent, though, that parents reject such enhancements out of demonstrable ignorance, irrational fear, or lack of freedom, more serious problems of equal protection would remain. Any equal protection problems would in an important sense be worsened if the poor and unenhanced as a class were somehow taught to delight in their condition.[62]

Equally disturbingly, the parental choice for unenhanced offspring might, depending upon the technology, effectively seal the inferior status of such offspring. It is possible that, at least for the offspring's generation and perhaps for their own successors, the offspring's status inferiority could not be reversed even if the offspring so preferred. In such cases, the offspring would lack meaningful freedom and equality in the relevant respects.[63]

In general, the gap between genetically enhanced persons and persons not thus enhanced—"naturals"—could eventually pose equal protection problems of unprecedented depth and severity. The gap

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Autonomy Rights and Genetic Disenhancement: Sidestepping the Argument from Backhanded Benefit, 21 J. APPLIED. PHIL. 125 (2004).

59. *See* FUKUYAMA, *supra* note 54, at 158 ("this is one of the few things in a politics of the future that people are likely to rouse themselves to fight [perhaps even literally, in the sense of recourse to "guns and bombs"] over).

60. *See, e.g.*, Nick Bostrom, *Human Genetic Enhancements: A Transhumanist Perspective*, 37 J. VALUE INQUIRY 493, 503 (2003).

61. See, e.g., the concerns raised by Professor Michael Sandel, *supra* note 40.

62. For the extreme case of conflict-reducing, systematic, and explicit class-based indoctrination and conditioning, see ALDOUS HUXLEY, BRAVE NEW WORLD (Harper & Row 1946) (1932).

63. *See, e.g.*, GREGORY STOCK, REDESIGNING HUMANS: CHOOSING OUR GENES, CHANGING OUR FUTURE 191 (2003) ("many parents might shun [germinal choice technology], but others would embrace it enthusiastically. With time, people's genetics would become a manifestation of their parents' values and predilections"). At greater length, but with a different focus as well, see Eric Rakowski, *Who Should Pay For Bad Genes?*, 90 CAL. L. REV. 1345 (2002) (discussing, among other proposals, a compulsory insurance-based scheme to provide compensation to genetically disadvantaged children).

could well become not merely a genetic gap, but a gap in every other economically and politically relevant respect as well.[64] The distances between enhanced and unenhanced persons, in socioeconomic terms, might well become "enlarged and less bridgeable."[65] Under such circumstances, it would not be unreasonable to characterize the eventual separation between enhanced and unenhanced as a "chasm"[66] or as societal fragmentation.[67]

Descriptions such as of a gulf or chasm between more or less discrete groups, or of societal fragmentation, raise serious equal protection clause concerns on their face. But there is even more serious cause for concern where an unbridgeable gulf comes to amount to a genuine "partitioning."[68] The existence of inequality, and perhaps even of severe inequality in one respect or another, is one thing. But the existence of severe and across the board, mutually reinforcing, realistically unbridgeable and "unassailable"[69] privilege and inequality is even worse.

What of the subjective bonds that help to unify a healthy society? Would empathy and identification long unify groups that have become remarkably different in their most basic capacities? The idea of a "shared humanity"[70] or of a connectedness to "humanity as a whole,"[71] within or beyond national borders, might well be eventually jeopardized.

At the extreme, it is possible to imagine that two discrete groups, one of which is able to pass along remarkable genetic enhancements—perhaps even automatically self-enhancing genetic enhancements—might eventually form two distinct subspecies.[72] We can imagine constitutional policies that seek to promote the best interests of both the enhanced and the unenhanced as separate actual subspecies. But to say

64. *See* SILVER, *supra* note 49, at 285.

65. Shapiro, *supra* note 52, at 809.

66. STOCK, *supra* note 63, at 140.

67. *See id. See also* MEHLMAN & BOTKIN, *supra* note 51, at 99 ("division of society into a genetic aristocracy and a genetic underclass would have momentous consequences . . . for democratic society . . . . It would undermine the fundamental precept upon which such a society rests: the maxim of social equality").

68. *See* STOCK, *supra* note 63, at 176.

69. *See* Maxwell J. Mehlman, *How Will We Regulate Genetic Enhancement?*, 34 WAKE FOREST L. REV. 671, 687 (1999).

70. FUKUYAMA, *supra* note 54, at 218.

71. STOCK, *supra* note 63, at 162.

72. Michael J. Sandel, *The Case Against Perfection*, 293 ATLANTIC MONTHLY 51, 52 (Apr., 2004).

that both groups are extended the equal protection of the laws, in any genuinely meaningful sense, might well become increasingly implausible.

The well-known philosopher Bernard Gert argues that "[g]erm line gene therapy probably comes as close as is humanly possible to guaranteeing that those families who can afford it will be able to perpetuate their social and political dominance."[73] How the genetically unenhanced would react to political domination is unclear. Some writers cite the possibility of resistance in one form or another;[74] others raise the possibility of acquiescing in the system in exchange for a portion of the economic benefits made possible by advanced enhancements.[75] Competition and economic mobility would on such a view become largely an intra-class phenomenon, rather than between members of different classes.[76]

Even if the unenhanced groups react passively to political domination, whether coerced, bribed, socialized, or freely persuaded in doing so, the underlying equal protection issues would remain. Nor do the obvious equal protection concerns dissolve even if we choose to say that the unenhanced are not being exploited[77] or discriminated against.[78] The gulf separating these classes[79] could be more profound than even some historic caste divisions, and could raise issues of equality and equal protection at the level of basic human rights.[80]

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73. Bernard Gert, *Genetic Engineering: Is It Morally Acceptable?*, U.S.A. TODAY MAGAZINE, Jan. 1999, at 30 (assuming that "gene therapy will be, for the foreseeable future, a very expensive procedure, so only the wealthy will be able to afford it").

74. *See supra* note 59 and accompanying text.

75. *See, e.g.*, Mehlman, *supra* note 49, at 552-53.

76. *See id.* at 553.

77. *See, e.g.*, the discussion in Bostrom, *supra* note 60, at 502.

78. *See id.*; STOCK, *supra* note 63, at 140.

79. Of course, the reference to classes is something of an idealization; for some purposes, references to persons would be more accurate. Society will not be divided into the entirely unenhanced and an elite benefiting equally within itself from equally advanced enhancements. Doubtless there will be a continuum ranging from overall least enhanced to overall most enhanced. Some persons may be able to afford few or no crucial enhancements. Other persons will have some but not all crucial enhancements, and perhaps a few persons will be able to afford and will be willing to pay for all of the crucial enhancements at critical times. The mixes of enhancements purchased may also vary, perhaps widely. It is possible that one person's unenhanced skills might in some historical period exceed another's enhanced skills. Crucially, though, the fact that everyone fits somewhere along a complex continuum does not mean that everyone is receiving equal protection of the laws.

80. *See, e.g.*, George J. Annas et al., *Protecting the Endangered Human: Toward An International Treaty Prohibiting Cloning and Inheritable Alterations*, 28 AM. J.L. &

III. ENHANCEMENTS AND THE CHANGING PROBLEMS OF INEQUALITY

The precise effects of human enhancements on inequalities among persons are unpredictable. Such effects will depend upon many things. Among these, surely, will be the technical nature and means of implementing the enhancements in question, their costs, overall social wealth, pre-existing economic inequalities, private and public health provision and health insurance, educational policies, cultural attitudes toward the redistribution of wealth, opportunities, and responsibility, as well as our sense of competing moral obligations toward persons in other cultures, our fellow citizens, and our own descendants.

Some of these factors may interact in important ways. For example, the early adopters of any enhancement technology might gain decisive advantages, opening up inequalities that broaden, deepen, and compound in practice. This could be loosely akin to the advantages held by a natural monopoly.[81] But the costs of different enhancements may unpredictably drop at different rates, affecting their value to early adopters. And what if later versions of an enhancement are not only much lower in cost, but more powerful, more sophisticated, less "clunky," and have a more immediate impact? What if adopting an early version of the enhancement actually impairs one's ability to benefit from the later, more sophisticated versions?

We shall see at the end of this section how some innovations may result not only in greater inequality, but in self-perpetuating, self-reinforcing, cumulating inequalities, with some crucial advantages translating themselves into other sorts of advantages, perhaps at unprecedented rates and scopes. Separate forms of enhancement, when joined together, may crucially augment one another and display a synergistic effect. Eventually, some enhancements, perhaps bearing upon information processing ability, may themselves become automatically self-enhancing enhancements that further worsen problems of inequality.

MED. 151, 154 (2002) (specifying the concern "that by altering fundamental human characteristics to the extent of possibly producing a new human species or subspecies genetic science will cause the resulting persons to be treated unequally or deprived of their human rights"). Consider, in the extreme, the complications raised by, *e.g.*, Kopinski, *supra* note 48. *See also* Weiss, *supra* note 48.

81. *See, e.g.*, RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 361 (6th ed. 2003); STEPHEN G. BREYER ET AL., ADMINISTRATIVE LAW AND REGULATORY POLICY 261 (5th ed. 2002) (noting the possibility that one firm may, by virtue of its advantaged position, continue to expand its productive capacity at a lower cost than would be faced by any competitor newly entering the same market).

We can hope that the factors at work in every given case somehow make the enhancement adoption process friendly toward equality. But there are no guarantees of equality-friendly results in all cases. For example, inequalities may exist even where unenhanced persons are in some sense sufficiently[82] well off, the quality of their lives is acceptable,[83] they can still exercise meaningful conscious agency,[84] they are subjectively happy[85] and good at turning their circumstances into happiness,[86] or they are even unaware of[87] or indifferent toward[88] their unequal status.

After all, equality is clearly a comparative concept.[89] Admittedly, there seems to be language in some Supreme Court opinions, such as the majority opinion in the educational funding case *San Antonio Indep. School Dist. v. Rodriguez*,[90] that may suggest otherwise.[91] But one

82. *See, e.g.*, Richard J. Arneson, *Why Justice Requires Transfers to Offset Income and Wealth Inequalities*, 19 SOCIAL PHIL. & POL'Y 172, 174 (2002) (discussing sufficiency-oriented approaches to distributive justice).

83. *See id.*

84. *See id.* at 191 n.20 (2002) (discussing ARTHUR RIPSTEIN, EQUALITY, RESPONSIBILITY, AND THE LAW, ch. 9 (1999)).

85. *See* G.A. Cohen, *On the Currency of Egalitarian Justice*, 99 ETHICS 906, 918 (1989) (discussing the case of Dickens's Tiny Tim). *See also* Amartya Sen, *Equality of What?*, *in* EQUAL FREEDOM 307, 313 (Stephen Darwall ed., 1995).

86. *See* Cohen, *supra* note 85, at 918.

87. *But cf.* Derek Parfit, *Equality and Priority*, 10 RATIO 202, 219 n.31 (1997) ("It is not bad for me if, unknown to me and without affecting me, there exist some other people who are better off than me") (contrasting this approach with the argument in JOHN BROOME, WEIGHING GOODS ch. 9 (1991)).

88. Inequalities can still exist not only where they are unrecognized by one or both of the relevant persons or groups, but where they are not objected to by the subordinate group. Consider a group of unenhanced persons who would not wish to change places with or even redistribute from a wealthier and more influential group of enhanced persons regarded by the former as excessively, unattractively intelligent, or as freakishly, inhumanly strong.

89. *See* ARISTOTLE, NICOMACHEAN ETHICS V(3)(A) (Christopher Rowe trans. 2002); Ronald Dworkin, *Equality, Luck and Hierarchy*, 31 PHIL. & PUB. AFF. 190, 198 (2003) (distinguishing provision for everyone's basic needs from a further concern for equality, particularly in the form of equality of status). Nor can the comparisons be confined to, say, comparing a person's share merely with the size of a sufficient share, or even comparing two persons' shares merely with regard to whether they are both minimally sufficient.

90. 411 U.S. 1 (1973).

91. *See id.* at 24. The Court observed that "the Equal Protection Clause does not require absolute equality or precisely equal advantages" at least in the context of wealth. An analogous logic would, however, presumably not hold in apportionment cases. *Cf.* Karcher v. Daggett, 462 U.S. 725 (1983), or in a voting rights case in which voters of one race cast ballots even 99% of the weight of those of another race. In *Rodriguez*, the majority pointedly noted that the equal protection plaintiffs had not claimed "an absolute

cannot make equality into a non-comparative or only limitedly comparative matter of being sufficiently well off, or having some minimal amount of a good in question.[92] This is true of distributions of rights and social benefits as well as of capacities and actions. Two persons may equally enjoy having a pension, a capacity to feel pleasure, or self-consciousness, but their pensions may be unequal, just as their capacities to feel pain or for self-consciousness may be unequal.

Whether it is more important that two persons equally have merely some degree of capacity, or that their degrees of capacity are unequal, depends upon context. A crucial reason for not killing a person may be the victim's mere capacity for self-consciousness, the bare minimal capacity being shared equally with other persons.[93] But we may, on the other hand, economically reward persons unequally for their unequal capacities. Little may depend on the fact that a less productive job applicant has some minimal productivity to offer. In economic markets, it is the inequalities of capacity that may be crucial.

We thus have no persuasive reason to believe that the rise of enhancements will likely dissolve problems of inequality. And there is some reason to believe that the rise of enhancements may eventually make the norm of personal equality both more difficult to understand in theory, and more difficult to achieve in practice. Of course, the actual effects of future enhancements will likely depend upon the sorts of cultural and economic factors mentioned at the beginning of this section. But the looming possibilities of increased problems in theory and in practice seem clear enough.

To understand the broadest and most distinctive theoretical problem, we must first face the blurring of many familiar and comfortable distinctions in the specific context of inequality and future enhancements. A number of familiar distinguishing concepts and categories will almost certainly come to be of diminishing value, if not entirely useless.

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deprivation of the desired benefit." *Id.* at 23. It remains true, however, that two slices of the pie are not equal merely because the smaller slice still amounts to some of the pie, and not an absolute deprivation of all pie. For further discussion of both *Rodriguez* and *Karcher*, *see infra* section V.

92. More abstractly, group A may enjoy less official concern and respect than group B, and in that sense be denied equal treatment, even where some level of concern and respect is accorded to group A.

93. For a recent search for viable grounds in equal capacity for the widely endorsed idea of the equality of persons, see JOHN E. COONS & PATRICK M. BRENNAN, BY NATURE EQUAL (1999).

Future enhancements may, as we have seen, lead to more compounding and mutual reinforcement of the familiar forms of inequality. Increasingly, inequalities of one sort may be strongly linked with inequalities of other sorts, rather than cutting across or somehow mitigating other sorts of inequalities. Without engaging in unnecessarily specific speculation, let us think about some of the possibilities.

Consider, for example, the familiar distinction between inequalities that result from risky but free choices, and inequalities not resulting from such choices.[94] There are inequalities for which we are said to be responsible through our choices, and others for which we are not thus responsible.[95] As a matter of shorthand, we may say that some inequalities arise through our own fault, and that others do not.[96]

While luck may play a role in many outcomes, there is said to be a crucial if already somewhat blurry[97] difference between option luck, legitimized by our voluntary choices, and brute luck, which is not.[98] Ronald Dworkin has famously emphasized this distinction,[99] as well as

94. *See, e.g.*, RONALD DWORKIN, SOVEREIGN VIRTUE: THE THEORY AND PRACTICE OF EQUALITY 7 (2000); Ronald Dworkin, *Sovereign Virtue Revisited*, 113 ETHICS 106, 107 (2002) ("[e]quality of resources places special emphasis on people's responsibility for the choices they make"); Samuel Scheffler, *Equality As the Virtue of Sovereigns: A Reply to Ronald Dworkin*, 31 PHIL. & PUB. AFF. 199, 199 (2003) ("luck egalitarianism" as holding that "inequalities deriving from people's voluntary choices are acceptable, whereas inequalities deriving from unchosen features of people's circumstances are unjust"); Anne Phillips, *Defending Equality of Outcome*, 12 J. POL. PHIL. 1, 2 (2004) (referring to distinguishing "between the illegitimate inequalities that arise from circumstances beyond our control and those legitimate ones that arise from the exercise of personal choice").

95. *See, e.g.*, THOMAS NAGEL, EQUALITY AND PARTIALITY 71 (1991) ("many of the important things in life . . . cannot be regarded as goods or evils for which they are responsible, and so fall under the egalitarian principle").

96. *See, e.g.*, LARRY S. TEMKIN, INEQUALITY 17 (1993) ("what is objectionable is some being worse off than others *through no fault of their own*") (emphasis in the original); *id.* at 13 n.21 (defining 'fault' in this context to include non-moral responsibility based on voluntary choices).

97. *See* DWORKIN, SOVEREIGN VIRTUE: THE THEORY AND PRACTICE OF EQUALITY, *supra* note 94, at 73 ("[o]bviously the difference between these two forms of luck can be represented as a matter of degree, and we may be uncertain how to describe a particular piece of back luck").

98. *See id.* ("[o]ption luck is a matter of how deliberate and calculated gambles turn out—whether someone gains or loses through accepting an isolated risk he or she should have anticipated and might have declined. Brute luck is a matter of how risks fall that is not in that sense deliberate gambles").

99. *See id. See also* Peter Vallentyne, *Brute Luck, Option Luck, and Equality of Initial Opportunities*, 112 ETHICS 529, 538 (2002) (distinguishing between brute luck and option luck where relevant to both initial opportunities and to outcomes, but without

the related distinction between resource distributions that are properly "ambition-sensitive"[100] and those that are unfairly "endowment-sensitive."[101]

In developing their descriptive theory and policy recommendations, leading egalitarians have relied upon these and further classic distinctions. The great twentieth century British theorist, R.H. Tawney, for example, sought to distinguish between equality of "capacity"[102] on the one hand, and equality of "circumstances"[103] on the other. Tawney similarly attempted to distinguish between equality or inequality of "personal gifts"[104] and of "the social and economic environment."[105]

More recently, Elizabeth Anderson has distinguished "supposed cosmic injustice"[106] from "distinctively political"[107] inequalities, with the former typically including such things as "being born with poor native endowments, bad parents, and disagreeable personalities, suffering from accidents and illness, and so forth."[108] Ronald Dworkin's theory has been said to depend upon a presumably similar distinction between inequality of resources that are impersonal or external to the person, and thus "a part of the world,"[109] and inequality of personal resources, including "a person's physical and mental capacities."[110]

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recognizing a possible future category of choice or option outcome luck with regard, remarkably, to one's initial opportunities).

100. DWORKIN, SOVEREIGN VIRTUE: THE THEORY AND PRACTICE OF EQUALITY, *supra* note 94, at 89.

101. *Id.*

102. R.H. TAWNEY, EQUALITY 48 (1971) (1952).

103. *See id. Cf.* Dworkin, *supra* note 89, at 192 ("the distinction between people's choices and their circumstances is of central importance to justice").

104. *See* TAWNEY, *supra* note 102, at 49.

105. *See id.*

106. Elizabeth S. Anderson, *What Is the Point of Equality?* 109 ETHICS 287, 288 (1999).

107. *Id.*

108. *Id.*

109. Michael Otsuka, *Luck, Insurance, and Equality*, 113 ETHICS 40, 42 (2002) (discussing Ronald Dworkin's theory).

110. *Id. See also* Ronald Dworkin, *Foundations of Liberal Equality*, *in* EQUAL FREEDOM 190, 293 (Stephen Darwall ed., 1995) ("liberal equality requires that impersonal resources be adjusted to compensate for differences in personal resources"). Amartya Sen's related focus on a person's capability seeks to bridge internal and external or social elements through the idea of freedom. *See* AMARTYA SEN, INEQUALITY REEXAMINED 49 (1992).

Understandably, we have also come to think of one's sheer bodily resources, whatever their value, as "nontransferable assets,"[111] thus we do not literally redistribute a person's keen or myopic vision to others. In contrast, the resources we think of as impersonal, such as arable land, a sophisticated computer system, cash, or stocks and bonds, are thought of as "transferrable assets."[112]

All of these distinctions may have their uses in proper contexts. But even with current technologies, we sense a blurring,[113] if not an utter unraveling, of the various distinctions above. We can easily appreciate that what we often think of as personal capacities, talents, "natural" gifts, or personal assets are actually in some measure social constructs, and to a degree culturally arbitrary constructs at that. The economic value of a special aptitude for slaying mastodons or controlling the flight of a golf ball is hardly culturally invariant.

One theorist notes that "[i]nequalities of talent are not simple facts of nature. Of course, some people *are* more talented than others—but only after culture has set standards that cooperate with nature to create such differences."[114] 'Personal' talents may reflect more or less prior investment of 'impersonal' assets. And as the basic distinctions underlying our understanding of equality and inequality begin to blur, so do the distinctions among the forms of equality we might seek. How clear, for example, in a future of enhanced capacities is a distinction between equal opportunity to gain access to the means of economic well-being, and equal opportunity in the sense of genuine initially equal prospects for economic well-being?[115]

And as these distinctions blur, we naturally wonder whether what we thought of as an uncontrollable matter of sheer luck should instead be thought of as a controllable matter of the fair or unfair distribution of assets.[116] With the future development of various enhancement technologies, even the boundary between changing a person's

111. See, e.g., the summary discussion of, among others, Ronald Dworkin in Larry Alexander & Maimon Schwarzschild, *Liberalism, Neutrality, and Equality of Welfare vs. Equality of Resources*, 16 PHIL. & PUB. AFF. 85, 103 (1987).

112. *Id.*

113. *See supra* note 97.

114. DOUGLAS RAE ET AL., INEQUALITIES 70 (1983) (emphasis in the original).

115. *See id.* at 75.

116. *See, e.g.*, PHILIPPE VAN PARIJS, WHAT'S WRONG WITH A FREE LUNCH? 25-26 (2001) (raising the possibility of considering various sorts of presumably personally undeserved parental "gifts" or inheritances as either fairly or unfairly distributed, and in the latter case perhaps objectionable).

capabilities and changing the very identity of the person may increasingly blur.[117]

There is a further difference, as well, between blurring a boundary line and shifting where a clear boundary line lies. Future enhancements may well actually shift the boundary between, for example, inequalities that are practically inevitable, and inequalities that are subject to some degree of choice and control. Fewer inequalities may be simply inevitable,[118] and more may become substantially alterable.[119] Shifting these boundaries may bring more aspects of inequality under our collective public control. Overall increased blurriness of our standard conceptual boundaries, as well as shifts in those boundaries, may thus add complexities to our understanding of inequalities.

One of the blurring distinctions above deserves some further attention, as it may pose the most difficult and important problems for equal protection. Let us therefore briefly consider the distinction between inequalities flowing from one's voluntary choices, and inequalities not flowing from such choices.[120] This traditionally crucial distinction may be both important and difficult to manage in the context of future enhancements.

The basic idea, as traditionally modified by bankruptcy law[121] and other practices and institutions, is that competent persons are assumed to have no valid complaint concerning inequalities that stemmed from their own more or less free, informed, voluntary choices, including principled as well as risk-taking decisions. Each of these qualifiers could be debated in general, and in particular cases. But for our purposes, the problems of both the metaphorical and the literal "inheritance" of

117. *See* Jonathan Glover, *Eugenics and Human Rights*, *in* THE GENETIC REVOLUTION AND HUMAN RIGHTS 101, 110 (Justine Burley ed., 1999). More generally "[a]s our powers over nature increase, we are bound to become less interested in what men are, and more interested in what we make them to be." JOHN WILSON, EQUALITY 49 (1966).

118. It is always possible to provide some financial compensation, for example, even to victims of fatal diseases for which we have no meaningful treatment or cure.

119. *See* Hillel Steiner, *Silver Spoons and Golden Genes: Talent Differentials and Distributive Justice*, *in* THE GENETIC REVOLUTION AND HUMAN RIGHTS 133, 146 (Justine Burley ed. 1999) ("[w]hat the genetic revolution does is to give a massive shove to the always moving frontier between nature and nurture: it puts events and objects which we've long treated as natural firmly into the domain of choice").

120. For this distinction, see, e.g., Dworkin, *Sovereign Virtue Revisited*, *supra* note 94, at 107; Scheffler, *supra* note 94, at 199.

121. *See* the Chapter 7 provisions available under the United States Bankruptcy Code, 11 U.S.C. §§ 101-1330 (2000) (enacted by the Bankruptcy Reform Act of 1978, Pub. L. No. 95-598, 92 Stat. 2549).

advantages and disadvantages from a genetic ancestor who has made some crucial choice are of special interest.

In most contexts, and apart from such matters as welfare and reparations[122] or gift, estate, and inheritance tax,[123] there is no equal protection or other legal rule that the consequences of a person's decision that have increased inequality must stop with that person's own generation, or with those family members who somehow gave their consent to the risky choices made. If family assets are freely and knowledgeably invested in unfortunate ventures, the law does not generally seek to limit the resulting inequalities to the consenting parties only.

Setting aside the monumental administrative costs and complexities involved in any other general policy, many may assume that the prospect of advantaging one's own genetic descendants is both an important incentive for effort and innovation,[124] and is generally not unfair to others. The idea of providing for one's own children's education—for their own human capitalization[125]—and not comparably those of others, is entirely familiar.[126] We do not, as a matter of equal protection law, seek to frustrate such genetically confined impulses.[127]

But what if an ancestor's voluntary decisions, on whatever grounds, resulted in the ancestor's having no transmissible genetic

122. *See* The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (Welfare Reform Act), 42 U.S.C. § 604a (1996). More broadly, *see* David Lyons, *Reparations and Equal Opportunity*, 24 B.C. THIRD WORLD L.J. 177 (2004).

123. *See generally* Economic Growth and Tax Reconciliation Act of 2001, Pub. L. No. 107-16, 115 Stat. 38 (2001) (codified as amended in scattered sections of 26 U.S.C.). For broader normative commentary, see, e.g., Edward J. McCaffrey, *The Uneasy Case for Wealth Transfer Taxation*, 104 YALE L.J. 283 (1994); Anne L. Alstott, *The Uneasy Liberal Case Against Income and Wealth Transfer Taxation*, 51 TAX L. REV. 363 (1996).

124. Despite occasional sightings of "I'm Spending My Kids' Inheritance" bumper stickers.

125. For background, see GARY S. BECKER, HUMAN CAPITAL: A THEORETICAL AND EMPIRICAL ANALYSIS, WITH SPECIAL REFERENCE TO EDUCATION (National Bureau of Economic Research 1964).

126. On various kinds of college tuition savings and payment plans, see, e.g., Michael A. Olivas, *State College Savings and Prepaid Tuition Plans: A Reappraisal and Review*, 32 J.L. & EDUC. 475 (2003).

127. Thus we do not as a matter of public policy seriously discourage massive parental investment in the most directly competitive aspects of childhood education, preparing for aptitude exams, and expensive private schools. For serious arguments that these sorts of massive investments in one's own children, at the expense of other gravely needy but rescuable persons, are often morally unjustifiable, see, e.g., Peter Singer, *Famine, Affluence, and Morality*, 1 PHIL. & PUB. AFF. 229 (1972); PETER UNGER, LIVING HIGH AND LETTING DIE: OUR ILLUSION OF INNOCENCE 134, 135, 150 (1996).

enhancements, and thus in no such genetic enhancements being inherited by the ancestor's descendants? Let us for the moment set aside cases in which the ancestor wanted transmissible genetic enhancements for the sake of his or her descendants but was, unlike others, unable to afford such enhancements through no personal fault.

The harder cases, it seems, would include unenhanced and now therefore severely disadvantaged persons whose ancestors rejected advanced genetic enhancements for reasons of moral or religious principle, concern for the costs of a "gamble," safety concerns of various sorts, or concerns over sheer efficacy and transmissibility.

In all of these cases, would we conclude that one's own fault, or one's own voluntary choice, includes the choices of one's ancestors, to which the now severely and perhaps irreparably burdened descendant never consented? It is difficult to rule out all such scenarios as simply unrealistic. Any particular enhancement–and perhaps even genetic enhancements as a class—may well have been even more unaffordable a generation ago.[128]

Consider as well that it may be difficult for a late adopter of enhancement technology to competitively catch up with persons who have been variously enhancing themselves, in cumulative and even accelerating fashion, for decades. Can we be sure that the latest and most powerful enhancements will not depend on whether one has already incorporated and mastered previous enhancements of one sort of another?

If early adopters are indeed likely to be well-placed to compound and broaden their advantages through newer enhancement technologies, and some do so, what patterns of inequality might we expect, given the existence of late-adopters and non-adopters? Should we expect all these groups to regard one another as genuinely equal fellow citizens? Will there be more or less benign Amish, if not Benedictine-type, socio-cultural separations? Will some or all of the unenhanced eventually be widely regarded as in every crucial respect the cognitive and physical inferiors of the enhanced? Should we then expect a stable, peaceful society based on a closed, utterly hierarchical, caste-like domination? What would genuine equal protection of the laws require in such a context?

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128. Consider the very loosely analogous case of decreases in the cost per unit of computing power, expressed as Moore's Law. *See, e.g.*, Michael R. Pakko, *Comparing Apples and Oranges,* THE REGIONAL ECONOMIST, Oct., 2002, *at* http://stlouisfed.org/publications/re/2002/d/pages/apples_oranges.html.

If we are tempted to minimize the equal protection problems of such a society, we should think further about the inequality-compounding "cumulativity" problem. The cumulativity problem arises when any form of inequality tends to translate itself into other dimensions of inequality, thereby reinforcing and compounding overall inequality. We begin to see fewer meaningful respects in which one form of inequality cuts across or even inverts another meaningful form of inequality, such that many sorts of persons see themselves as privileged in some valued respect, though not in others.[129] Persons who are thought of as "superior" in any key respect tend increasingly, given cumulativity, to be thought of as "superior" in other key respects as well.

This cumulativity problem is hardly a new one, as a glance at the historical phenomenon of chattel slavery suggests.[130] Cumulativity of inequalities may be an old and recurring problem,[131] but the severity and scope of the cumulativity problem may vary over time and circumstance. Consider the well-known dystopia, The Rise of the Meritocracy, by the English social scientist Michael Young.[132] Young referred to the old days in which, with mixed results "no class was homogeneous in brains."[133] Presumably, lack of brains in a member of the economic elite often impairs the cementing of one's elite status. Young goes on to fictionally report, however, that "[n]ow that people are [accurately and unbiasedly] classified by ability, the gap between the classes has inevitably become wider."[134]

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129. Classically, Plato's ideal Republic featured non-competing or cross-cutting hierarchies of unequal possession of gold and other material goods, hierarchies of persons with respect to bravery and prowess in defending the polis, and hierarchies in ability to discern wisdom in public policy. While each of these hierarchies could describe an important dimension of inequality, crucially, the privileged in one category were not reinforcingly privileged in the other categories. *See* PLATO, THE REPUBLIC OF PLATO (Francis M. Cornford trans., Oxford Univ. Press 1945) (1941).

130. Presumably slavery is associated not only with unequal to non-existent income and wealth on the part of the slave, along with unequal geographic and labor mobility, marital eligibility, educational opportunities, etc. *See, e.g.*, MARK V. TUSHNET, THE AMERICAN LAW OF SLAVERY 1810-1860: CONSIDERATIONS OF HUMANITY AND INTEREST (1981).

131. See, e.g., the discussion in MICHAEL WALZER, SPHERES OF JUSTICE: A DEFENSE OF PLURALISM AND EQUALITY 17 (1983) (expressing concern not just for the size of inequalities, but for the problem of one or more forms of inequality being converted into other forms of inequality through a multiplicative or reinforcement process).

132. *See* MICHAEL YOUNG, THE RISE OF THE MERITOCRACY 1870-2033 (1958).

133. *Id.* at 106.

134. *Id.* Richard Sennett observes that "Michael Young . . . was a critic of his own word; he feared a new division between elite and mass, an able elite which feels it

Inequalities among persons in such a context can become clearer, more severe, more rigid, and more pervasive across the various dimensions of social life. Concisely put, "often the causal strings run . . . from desirable genes to favorable socialization to success in a competitive labor market to marriage with someone with desirable genes."[135] One form of inequality thus tends to reinforce itself by translating itself into other forms of inequality.

By this point, we should sense some of the problems in assuming the fairness of rewarding persons more for their greater economic productivity, and less for their lesser economic productivity. Productivity is not simply a matter of the exertion, once or over time, of a freely exercised will. Productivity instead has crucial prerequisites that are either equally or unequally distributed. One scholar has noted "the close causal relationship between productive capacity and other, unequal allocations—of capital, training, genetic advantage. If these are unequally distributed, and lead to unequal productivity, why should this determine yet another unequal pattern of allocation?"[136]

If the development of more, and much more effective, techniques of human enhancement increases the chances that persons unequal in one crucial respect will be unequal in other crucial respects, the problem of cumulating inequalities must worsen. This development, in turn, would inevitably strain general social solidarity, any sense of commonality, and the government's capacity to provide for the equal protection of the laws in any meaningful sense. If the constitutional guarantee of the equal protection of the laws is to be meaningful, there must be limits to the reinforcing cumulativity of inequalities,[137] before we develop caste-like hierarchies.

Overall, then, it seems unlikely that increasingly stark inequalities between enhanced and unenhanced persons will simply reflect the relevant person's free choices and deserved outcomes. The inequalities generated by human enhancement technology will not simply be the fault of all those who lag behind. The primary moral responsibility for such inequalities and their legal consequences will instead lie with the

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merits its privileges, a mass at once abashed and resentful of smart people." RICHARD SENNETT, RESPECT IN A WORLD OF INEQUALITY 97 (2003).

135. DOUGLAS RAE ET AL., INEQUALITIES 6 (1983).

136. *Id.*

137. *Cf.* DAVID MILLER, PRINCIPLES OF SOCIAL JUSTICE 242 (1999) (arguing against "the emergence of large-scale, cumulative inequalities of advantage that make it difficult for people to live together on terms of equality, even if politically they are all defined as equals").

electorate, the political branches, and ultimately a judiciary sworn to give meaning to the equal protection of the laws.

IV. HUMAN ENHANCEMENTS AND THE MEANINGS OF EQUALITY AND EQUAL PROTECTION

The idea of equality itself is certainly not self-clarifying. Even if the idea of equality is not by itself empty,[138] the idea itself may not point us to one particular public policy standard as opposed to another.[139] However we think of the idea of equality itself, we may still be able to sort out more and less useful understandings of the more specific and contextualized constitutional idea of the equal protection of the laws. The looming prospect of advanced human enhancements may well assist us in this effort.

The language of the equal protection of the laws is in itself admittedly not much more determinate than the broader language of equality itself.[140] The equal protection clause has an obvious historical context and a central historical focus,[141] but the terms and logic of equal protection are both general and unclear.[142] The textual openness of the equal protection clause has been recognized by commentators.[143] While the equal protection clause plainly arises from a particular context,[144]

138. See the discussion on this issue between Peter Westen, *The Empty Idea of Equality*, 95 HARV. L. REV. 537 (1982) and Kent Greenawalt, *How Empty is the Idea of Equality?*, 83 COLUM. L. REV. 1167 (1983) and then on somewhat different terms between Christopher J. Peters, *Equality Revisited*, 110 HARV. L. REV. 1210 (1997) (equality as arbitrary if not incoherent) and Kent Greenawalt, *"Prescriptive Equality": Two Steps Forward*, 110 HARV. L. REV. 1265 (1997) (equality as a more substantively useful concept at least in some narrow contexts).

139. *See* DOUGLAS RAE ET AL., INEQUALITIES 150 (1983) ("[w]e are always confronted with more than one practical meaning for equality and equality itself cannot provide a basis for choosing among them").

140. *See* Town of Ball v. Rapides Parish Police Jury, 746 F.2d 1049, 1056 (5th Cir. 1984).

141. *See id.* ("the Clause was enacted in 1868 as part of the Fourteenth Amendment, which was directed at the destructive continuing racial discrimination after the Civil War").

142. *Id.*

143. The court in *Town of Ball* itself, *id.* at 1056 n.19, cites Michael J. Perry, *Modern Equal Protection: A Conceptualization and Appraisal*, 79 COLUM. L. REV. 1023, 1025 (1979) ("the language of the clause, after all, is opaque") and Owen Fiss, *Groups and the Equal Protection Clause*, 5 PHIL. & PUB. AFF. 107, 108 (1976) ("the text [of the Clause] has no meaning").

144. *Town of Ball*, 746 F.2d at 1056.

"the terms of equal protection were hardly limited and, at the same time, are less than instructive. . . ."[145]

History has supported the Supreme Court's modest conclusion that "[t]he equal protection clause. . . is not susceptible of exact delimitation."[146] What general sorts of admittedly inexact delimitations are possible? If we borrow from Professor Kent Greenawalt's discussion of equality in general,[147] as opposed to the distinct and institutionally contextualized idea of equal protection, we are left with five general possibilities:

> First, the principle [of equality itself] may be tautological and empty. Second, it may not be empty in this way, but it may prove on examination to be mistaken or even incoherent. Third, the principle may carry direct deontological force, indicating moral considerations that do not depend on the consequences of an action.[148] Fourth, the principle may reflect generally applicable consequentialist considerations.[149] Fifth, the principle may express deep-rooted feelings, not easily dispelled, to which decision makers appropriately are responsive.[150]

Perhaps the equal protection of the laws, along with the more general idea of equality itself, might be thought of in any of these terms. Doubtless we would want first to explore deontological (direct right and wrong) and consequentialist (good and bad outcome) understandings, and even feeling-based understandings, of equal protection before adopting the unnecessarily defeatist position that even the more particular and contextualized idea of the equal protection of the laws is empty or incoherent.

In its more general use in ethics and in political and legal philosophy, the idea of equality can be fleshed out in various ways. Writers have, for example, often focused on equality of welfare;[151]

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145. *Id.*

146. Louisville Gas & Elec. Co. v. Coleman, 277 U.S. 32, 37 (1928) (quoted in Brower v. Bronkema, 377 Mich. 616, 646, 141 N.W.2d 98 (1966)).

147. *See* Kent Greenawalt, *Prescriptive Equality: Two Steps Forward*, 110 HARV. L. REV. 1265, 1273 (1997).

148. For a slightly different take on equality as a deontological principle, see LARRY S. TEMKIN, INEQUALITY 11 (1993) ("[o]n a deontological version inequality is primarily relevant to assessing agents or actions").

149. For Professor Temkin's contrasting take on equality as a consequentialist or teleological principle, see *id.* ("on a teleological version inequality is primarily relevant to assessing outcomes").

150. Greenawalt, *supra* note 147, at 1273.

151. *See, e.g.*, G.A. COHEN, IF YOU'RE AN EGALITARIAN, HOW COME YOU'RE SO RICH? 177 (2000).

equality of resources;[152] equality of wealth;[153] equality of incomes;[154] equality of capacities;[155] equality of respect or esteem;[156] equality of concern;[157] equality of stake, voice, and status;[158] equality of opportunity;[159] and, on one open-ended listing, equality of "[l]iberties, rights, utilities, incomes, resources, primary goods, need-fulfillments, etc.,"[160] as well as combinations of the above.[161]

The more particularized idea of equal protection of the laws may certainly draw upon any of the above dimensions of equality. But for our purposes, the literally relevant form of equality, upon which we must focus, is the institution of the equal protection of the laws. This is not to suggest that we must necessarily be able to decompose the meaning of the equal protection of the laws into separate components. The meaning of 'equal,' as a modifier, and the meaning of 'protection of the laws,' may not necessarily yield in combination the meaning of 'equal protection of the laws.' The 'equal protection of the laws' as a social practice or ideal may thus not be equal to the sum of its parts. Perhaps there is something we can recognize as 'the protection of the laws' by itself, which we should then somehow equalize. But certainly we need not assume this in advance.

Whether we treat the equal protection of the laws as a compound or as a unitary concept, we can begin to flesh out this concept through the

152. *See, e.g., id.*; RONALD DWORKIN, SOVEREIGN VIRTUE 12 (2000).

153. *See, e.g.*, Alan Ryan, *Does Inequality Matter—For Its Own Sake?* 19 SOCIAL PHIL. & POL'Y 225, 241 (2002).

154. *See, e.g., id.*

155. *See, e.g.*, DAVID MILLER, PRINCIPLES OF SOCIAL JUSTICE 231 (1999).

156. *See, e.g.*, Ryan, *supra* note 153, at 241; Ronald Dworkin, *Sovereign Virtue Revisited*, 113 ETHICS 106, 106 (2002); R.H. TAWNEY, EQUALITY 113 (1971) (1952) (referring to a "common tradition of respect and consideration").

157. *See, e.g.*, Dworkin, *Sovereign Virtue Revisited*, *supra* note 156, at 106; Samuel Scheffler, *Equality As the Virtue of Sovereigns: A Reply to Ronald Dworkin*, 31 PHIL. & PUB. AFF. 199, 205 (2003); Richard W. Miller, *Too Much Inequality*, 19 SOCIAL PHIL. & POL'Y 275, 299 (2002).

158. *See* Ronald Dworkin, *Equality, Luck and Hierarchy*, 31 PHIL. & PUB. AFF. 190, 190 (2003).

159. *See, e.g.*, Lyons, *supra* note 122, at 183; Andrew Mason, *Equality of Opportunity and Differences in Social Circumstances*, 54 PHIL. Q. 368 (2004).

160. AMARTYA SEN, INEQUALITY RE-EXAMINED 25 (1992). Professor Sen also distinguishes equality of "incomes, wealth, opportunities, achievements, freedoms, [and] rights." *Id.* at 12.

161. *See, e.g.*, MILLER, *supra* note 155, at 231 (referring to, among other forms of equality, equality of "opportunity for welfare").

idea of governing "impartially."[162] But the very idea of 'impartiality' in government decision-making depends upon some underlying substantive theory of fair treatment that gives meaning and substantive context to the ideas of partiality and impartiality. The idea of impartial governing gains meaning only through our making underlying substantive choices about fairness in governmental decision-making.

We can see this more clearly if we think of a denial of equal protection taking the form of a government decision "on the basis of irrelevant criteria."[163] The relevance or irrelevance of some criterion of government decision-making cannot be determined by examining the bare verbal formulation of the equal protection of the laws. Criteria such as test scores, physical strength, or resistance to disease, are not in themselves necessarily indicative of government bias, partiality, or the lack thereof. Some underlying substantive theory is required before we can decide which, if any, of the above criteria count as partiality in any particular equal protection case.

Further, and even more importantly, we cannot always rest content with a theory that pronounces some difference among persons to be relevant, even where that difference is indeed clearly linked to a government aim and clearly does make some important practical difference in the real world. It is in contexts such as that of human

162. *See, e.g.*, Lehr v. Robertson, 463 U.S. 248, 265 (1983) ("[t]he concept of equal justice under law requires the state to govern impartially"). This formulation seems to equate the equal protection of the laws and equal legal justice. It seems possible to think of "equal legal justice" as narrower than, broader than, or in some respects both narrower and broader than the equal protection of the laws. If the ideas are to be equated, it would seem to follow that equal protection of the laws cannot be taken in any particularly narrow, technical, or limited sense, lest it fail to encompass the broad notion of equal justice. *See also* Craig v. Boren, 429 U.S. 190, 211, 211 (1976) (Stevens, J., concurring) (the equal protection clause as requiring "every State to govern impartially"). *Cf. Town of Ball*, 746 F.2d at 1056 (the equal protection clause's "guarantee is both simple and wide—equal and uniform governmental classifications").

163. Christopher J. Peters, *Equality Revisited*, 110 HARV. L. REV. 1210, 1220 (1997). Deciding a case on the basis of irrelevant criteria may violate notions of procedural due process, but such a decision may also, as in a typical case of racial discrimination, deny the equal protection of the laws as well. *See id.*; Turner v. Fouche, 396 U.S. 346, 362 (1970) (formulating the traditional, minimalist equal protection test as "whether the challenged classification rests on grounds wholly irrelevant to the achievement of a valid state objective") (citing McGowan v. Maryland, 366 U.S. 420, 425 (1961)). A somewhat stronger, but no more independent, formulation has it that governments must not "discriminate against their inhabitants except upon some reasonable differentiation fairly related to the object of the regulation." Gerald Gunther, *Foreword: In Search of Evolving Doctrine on a Changing Court: A Model for a Newer Equal Protection*, 86 HARV. L. REV. 1, 23 (1972).

genetic and other enhancements that this becomes especially clear. We must, it turns out, still ask about the history, consequences, and fairness of even such evidently relevant differences among persons.

It is easy to assume that equal protection requires government attention to relevant and not irrelevant differences among persons, with treatment of persons to be somehow proportioned to the extent of the relevant difference. Similarly situated people should be treated similarly, but relevantly dissimilar people may, it is commonly assumed, be treated in some proportionately dissimilar way.[164] If persons or groups differ in some way directly bearing upon a legitimate aim sought by the government, those persons or groups may, it is commonly thought, properly be treated in some correspondingly unequal fashion.

We cannot pause here to develop the point,[165] but it is in contexts such as human genetic and other enhancements that the inadequacy of these common sense understandings of equal protection becomes most noticeable. Dramatic differences in basic talents and capacities may arise from differences in access to genetic and other sorts of enhancements. And these dramatic disparities in basic talents and capacities may indeed be crucially relevant to various legitimate and important governmental purposes. But these circumstances alone do not necessarily license the corresponding inequalities in the government's treatment of the unequally capable persons. Much more must be considered before we can assess the government's compliance with the real requirements of equal protection.[166]

But how should we think of the real meaning of equal protection of the laws? We find that the resources of several sorts of general theories

164. *See, e.g.*, Reed v. Reed, 404 U.S. 71, 75 (1971); Tigner v. Texas, 310 U.S. 141, 147 (1940); F.S. Royster Guano Co. v. Virginia, 253 U.S. 412, 415 (1920); United States v. Horton, 601 F.2d 319, 324 (7th Cir. 1979) ("[e]qual protection is the guarantee that similar people will be dealt with in a similar manner and that people of different circumstances will not be treated as if they were the same") (quoting JOHN NOWAK ET AL., CONSTITUTIONAL LAW 520 (1978)); Jenkins v. State, 540 P.2d 1363 (1976) (en banc) (equal protection "does not require that things different in fact be treated in law as though they were the same," but "it does require, in its concern for equality, that those who are similarly situated be similarly treated") (quoting Joseph Tussman & Jacobus ten Broek, *The Equal Protection of the Laws*, 37 CAL. L. REV. 341, 344 (1949)); Darren Leonard Hutchinson, *"Unexplainable On Grounds Other Than Race": The Inversion of Privilege and Subordination in Equal Protection Jurisprudence*, 2003 U. ILL. L. REV. 615, 620 (equal protection clause as distinguishing between similarly situated and dissimilarly situated groups or persons with respect to the purpose of the state action).

165. *See generally infra* sections IV-V.

166. *See generally id.*

are available. Equal protection is often thought of in terms, first, of anti-discrimination,[167] however the latter idea may be fleshed out. Then, there are also anti-differentiation approaches[168] to equal protection that can in turn be contrasted with anti-subordination and group-focused political process views.[169] A broad version of the latter sort has been

167. *See, e.g.*, Paul Brest, *Foreword: In Defense of the Anti-Discrimination Principle*, 90 HARV. L. REV. 1, 1 (1976) (hereinafter Paul Brest, *Foreword*) ("[b]y the 'anti-discrimination principle' I mean the general principle disfavoring classifications and other decisions and practices that depend on the race (or ethnic origin) of the parties affected); Joseph Tussman & Jacobus ten Broek, *The Equal Protection of the Laws*, 37 CAL. L. REV. 341, 342 (1949) (referring to, among other functions of the equal protection clause, its use "to oppose 'discriminatory' legislation," with no apparent contextual restriction to matters of race or ethnicity); Owen M. Fiss, *Groups and the Equal Protection Clause*, 5 PHIL. & PUB. AFF. 107, 108 (1976) ("the anti-discrimination principle embodies a very limited conception of equality, one that is highly individualistic and confined to assessing the rationality of means"). While some versions of the anti-discrimination principle may indeed be this deficiently narrow, Paul Brest's version seeks to prevent not only irrationalities of means, but unfairness more generally, at least in the realm of process, as well as "certain harmful results of race-dependent decisions." Paul Brest, *Foreword*, at 6.

168. *See, e.g.*, Ruth Colker, *Anti-Subordination Above All: Sex, Race, and Equal Protection*, 61 N.Y.U. L. REV. 1003 (1986) (anti-differentiation on any given classification as rejecting different treatment on that basis); Hutchinson, *supra* note 164, at 620 ("[a]t its most rudimentary level, the Equal Protection Clause prohibits states from differentiating among similarly situated groups or individuals"); Jeffrey A. Roy, *Carolene Products: A Game-Theoretic Approach*, 2002 B.Y.U. L. REV. 53, 78 (equal protection anti-differentiation theories as focusing on the rights of individuals as opposed to group statuses or the process of group subordination).

169. *See, e.g.*, Colker, *supra* note 168 (arguing generally against racial and sexual subordination in various contexts); Roy, *supra* note 168, at 78 (anti-subordination theories as focusing on group statuses and on the process of group subordination); Daniel Markovits, *How Much Redistribution Should There Be?*, 112 YALE L.J. 2291, 2292-93 (2003) (emphasizing non-subordination in ways that reflect what is deemed fundamental or important about persons). One might attempt to distinguish anti-differentiation theories from anti-subordination theories by supposing that the latter would be more naturally accommodating of affirmative action programs. But it is also possible to imagine some version of anti-differentiation theory at least as open to affirmative action as some version of anti-subordination theory. For various ordinary understandings of 'subordination,' *see* OXFORD ENGLISH DICTIONARY ONLINE (2d ed. 1989), *at* http://dictionary.oed.com/cgi/entry/00240914 (visited Feb. 24, 2004). Anti-subordination theories of equal protection are often linked to theories that emphasize relevant political processes, or defects therein. *See, e.g.*, Colker, *supra* note 168; Roy, *supra* note 168, at 78; Michael J. Klarman, *An Interpretive History of Modern Equal Protection*, 90 MICH. L. REV. 213, 308-09 (1991) (political process theories as identifying "suspect classifications according to criteria of historical discrimination and political impotence"); Stephen M. Rich, *Ruling By Numbers: Political Restructuring and the Reconsideration of Democratic Commitments After Romer v. Evans*, 109 YALE L.J. 587, 591 (1999) (process-based equal protection theories as concerned to prevent the political process from generating "perpetual losers"); C. Edwin Baker, *Outcome Equality or Equality of Respect: The Substantive Content of Equal Protection*, 131 U.

referred to as anti-group-disadvantaging theory,[170] while a narrower but important version of anti-subordination theory is the widely discussed anti-caste principle.[171] As it turns out, even the most extreme formulations of the anti-caste principle will be useful for our purposes. Even some approaches that arguably stop short of seeking equality, such as those that focus on social inclusion[172] or on building a cohesively unified peaceful community[173] will be relevant to our equal protection inquiry. And finally, at the deepest level, we must consider accounts of equal protection that focus on affirming that particular persons or groups are fully and truly human.[174] The latter such accounts of equal protection we may think of as human rights-based theories.[175]

Any of the above approaches may have something to contribute to a full understanding of equal protection in the context of genetic and other human enhancements. Anti-discrimination theory might at a

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PA. L. REV. 933, 933 (1983) (reacting to "the failure of all attempts to develop a coherent approach to the clause based entirely on process, rationality, or representation-reinforcing considerations"). The latter reference is centrally to the classic work of JOHN HART ELY, DEMOCRACY AND DISTRUST 87-88 (1980).

170. *See* Fiss, *supra* note 167, at 108.

171. *See, e.g.*, Cass R. Sunstein, *The Anti-Caste Principle*, 92 MICH. L. REV. 2410, 2411 (1994) (anti-caste principle as prohibiting "translating highly visible and morally irrelevant differences into systemic social disadvantage unless there is a very good reason for society to do so"); David Estlund, *Review of Cass Sunstein, Designing Democracy*, 113 ETHICS 911, 913 (2003) (a society divided into "readily identifiable" higher and lower caste members would deny to the latter "the equal role in political deliberations to which they are entitled"); Kenneth L. Karst, *Why Equality Matters*, 17 GA. L. REV. 245, 247-48 (1983) (treatment of a person as "part of a dependent caste" as presumptively degrading, stigmatizing, disrespecting, and thus contrary to the "equal citizenship principle that is at the core of the Fourteenth Amendment").

172. *See, e.g.*, Hugh Collins, *Discrimination, Equality and Social Inclusion*, 66 MODERN L. REV. 16, 22 (2003) ("[t]he group of social excluded is defined rather as people who are effectively prevented from participating in the benefits of citizenship or membership in society owing to a combination of barriers").

173. *See* Fiss, *supra* note 167, at 151 (elimination of caste might promote community cohesion, peace, and development of the capacities of the currently subordinated). See also the discussion of "minimal conditions of cooperation" and of "the minimum required for the preservation of society" in Shelly Kagan, *Does Consequentialism Demand Too Much? Recent Work On the Limits of Obligation*, 13 PHIL. & PUB. AFF. 239, 242 (1984).

174. In the context of his discussion of "the fundamental anti-discrimination norm," Professor Michael J. Perry bars a range of unequal governmental treatment based on, among other proscribed motives, "a view to the effect that the disfavored citizens are not truly or fully human—that they are, at best, defective, even debased or degraded, human beings." MICHAEL J. PERRY, WE THE PEOPLE: THE FOURTEENTH AMENDMENT AND THE SUPREME COURT 76 (1999). *See also id.* at 81.

175. *See id.* at 76; Michael J. Perry, *Human Rights As Morality, Human Rights As Law* (unpublished manuscript).

minimum ask that we not irrationally underrate the capacities of the unenhanced or irrationally overrate those of the artificially enhanced. Depending on how anti-discrimination theory is developed, such a theory might only legitimize, while not exaggerating, a vast gulf between the enhanced and the unenhanced. But anti-discrimination theory, taken in another direction, might also usefully direct suspicion at any system of legally enforced reward and privilege, even those formulated in terms of genuine differences in clearly relevant capacities, that distinguish too casually or too non-historically between the enhanced and the unenhanced.

Similarly, anti-differentiation theories may be of more or less use to the unenhanced depending on how such theories are developed. If, in the extreme, the idea is that the enhanced and unenhanced should not be treated differently in ways traceable to their enhanced or unenhanced status, the constitutional benefits to unenhanced persons could be dramatic. If, on the other hand, anti-differentiation theory ignores the history and current status and prospects of the unenhanced as a group, or if the enhanced and unenhanced are seen merely as relevantly differently situated, hence properly differentiated, the unenhanced stand to gain little from anti-differentiation theory.

Anti-subordination and group-focused political process approaches may seem more generally favorable to the unenhanced than are anti-differentiation approaches, but this would again depend upon how both sorts of theories are developed.[176] There could be strongly re-distributive anti-differentiation theories, and extremely narrow anti-subordination theories. An emphasis on political process may or may not be of much help to the unenhanced. In time, the genetically and otherwise enhanced may come to be immediately distinguishable, perhaps visually, from the unenhanced. In every practical respect, the unenhanced may come to meet the classic literal requirements of a "discrete and insular"[177] politically powerless minority.

Whether the Court would be receptive to an anti-subordination or political process theory on behalf of the genetically unenhanced is far from clear. In some cases, unenhanced status may be meaningfully

176. *See supra* note 169.

177. *See* United States v. Carolene Prods., 304 U.S. 144, 152 n.4 (1938); Roy, *supra* note 168; Bruce A. Ackerman, *Beyond Carolene Products*, 98 HARV. L. REV. 713 (1985); Lewis F. Powell, Jr., *Carolene Products Revisited*, 82 COLUM. L. REV. 1087 (1982).

alterable.[178] To some degree one's enhanced versus unenhanced status may reflect one's pre-existing wealth or poverty. But the equal protection rights of identifiably poor,[179] homeless,[180] or uneducated[181] persons to redress on that basis may be limited. And even if the unenhanced quite predictably continue to lag economically[182] or hold only limited and diminishing political influence,[183] their available redress under the equal protection clause might still be limited.[184]

To the extent that there are clearly identifiable, even immediately visible, distinctions between persons with and without various important enhancements, questions of caste arise. Some useful enhancements may eventually become both widely affordable and unobjectionable to most persons. But if divisions between those largely with and without crucial enhancements harden and multiply, questions of caste[185] may be inescapable. Whether the grounds of caste are technically genetically inheritable, as some enhancements may be, is less important than whether the relevant differences and their practical life effects can realistically be overcome.[186]

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178. The Court noted the alterability of one's classification as an adult alien in *Plyler v. Doe*, 457 U.S. 202, 220 (1982).

179. *See* Dandridge v. Williams, 397 U.S. 471 (1970) (applying minimum scrutiny re state imposed maxima on family welfare benefits).

180. *See* Lindsey v. Normet, 405 U.S. 56 (1972) (no elevated equal protection scrutiny regarding housing needs).

181. *See* San Antonio Indep. School Dist. v. Rodriguez, 411 U.S. 1 (1973) (no fundamental federal constitutional right to an education for equal protection purposes).

182. *See Dandridge*, 397 U.S. 471; RONALD DWORKIN, FREEDOM'S LAW: THE MORAL READING OF THE AMERICAN CONSTITUTION 36 (1996) (rejecting "a degree of economic equality" as a constitutional right); LAURENCE H. TRIBE & MICHAEL C. DORF, ON READING THE CONSTITUTION 16 (1991) ("[i]f *we* were writing a Constitution . . ., we might well favor . . . a constitutional provision setting a ceiling on the intergenerational transmission of wealth . . . . But . . . it is quite impossible to read *our* Constitution as including [such a provision]") (emphasis in the original).

183. For discussion of some practical limits on minority electoral influence in the racial context, see, e.g., Lani Guinier, *Groups, Representation, and Race-Conscious Redistricting: A Case of the Emperor's Clothes*, 71 TEX. L. REV. 1589 (1993); Lani Guinier, *The Triumph of Tokenism: The Voting Rights Act and the Theory of Black Electoral Success*, 89 MICH. L. REV. 1077 (1991).

184. *But cf.* Miller v. Johnson, 515 U.S. 900, 932 (1995) (Stevens, J., dissenting) (distinguishing between perpetuating "a caste system" and "eradicating racial subordination" in the context of voting redistricting).

185. *See supra* notes 171, 173.

186. Thus, whether a parent's advantage can be genetically transmitted may not be crucial if the advantage, or the benefits accruing from the advantage, can be conferred through non-genetic cultural means. The practical insurmountability of an advantage may be more important than whether it is literally inheritable.

We have seen that some enhancements will be more practically crucial in affecting basic life opportunities than others. Some may be especially costly, and may remain so over time. Others may be morally objectionable to some non-dominant groups. Some enhancements may interact synergistically with others. The advantages of some enhancements may compound over time. Some enhancements may even make meaningful interaction with unenhanced persons less attractive, or even less possible. Some may hold less value for late adopters. Some may build upon or otherwise presume earlier enhancements. Some enhancements may themselves be automatically self-enhancing. A few enhancements may be all of the above.

Enhancements that display any of the above qualities are especially likely to raise issues of caste. At some point, persons with the above sorts of enhancements may find that they have little in common with the generally unenhanced, or with the merely low-tech enhanced. While all sorts of persons, including the unenhanced, may have some minimally useful social role to play, any pretense of social and economic equality, or equality of political standing, let alone equality of political influence, may become difficult to sustain. That there really are significant and relevant differences in basic abilities between castes is largely beside the point.

At that point a serious and responsive anti-caste approach to the equal protection clause would call for some form of meaningful, substantive redress. If we face a high-tech, largely market-driven caste system, unprecedented in its disparities, then merely formalistic[187] approaches to equal protection will not suffice. At such a point, we must appreciate that a functioning democracy has some inescapable substantive prerequisites. The Supreme Court has already recognized in at least one context that "[t]he Equal Protection Clause was intended to work nothing less than the abolition of all caste-based and invidious class-based legislation."[188] To this must be added legislation and other forms of state action that support and preserve a caste system.

If the courts insist, however, on distinguishing for equal protection purposes among different kinds of caste systems, we must then emphasize the unique potential for rigidity and near impermeability of caste systems reflecting unequal human enhancements. Traditional low

187. Formalism and a sense of the perils and complications of judicial intervention pervade *San Antonio Indep. School Dist. v. Rodriguez*, 411 U.S. 1 (1973) and the discussion *infra* section V.

188. Plyler v. Doe, 457 U.S. 202, 213 (1982).

tech caste systems, after all, have been limited by genetic commonalities, where even great disparities in wealth could do relatively little to disguise those commonalities. Dramatically advanced future human enhancements, unequally distributed, may lead to far greater capacity differences among persons.

Suppose it becomes possible for some persons, through their special access to technology, to obtain and meaningfully apply information hundreds of times faster than their unenhanced colleagues. Suppose these and other inequalities were self-compounding. Would it be surprising if meaningful decision-making power tended to increasingly concentrate within the group of the enhanced? Would it be surprising to see "equality" in such a society increasingly understood as merely proportionately unequal treatment for plainly unequal persons? Would it be surprising for an increasingly stark, deep, and broad social separation to develop between the elite and the unenhanced? Or even for the view to eventually arise that "the disfavored citizens are, at best, defective, even debased and degraded, human beings."[189]

Ultimately, though, concern for the meaningful equal protection rights of the unenhanced in a divided society need not confine itself within the bounds of any single one of the several insightful approaches to equal protection theory discussed briefly above. As we shall now see, by considering examples from the Court's equal protection jurisprudence, the decisive choice is not so much of explicit, formal theory, but between giving genuine substance to the equal protection clause and reducing the equal protection clause to formalistic triviality.

V. CHOOSING AMONG APPROACHES TO EQUAL PROTECTION: HUMAN ENHANCEMENTS AND THE LOGIC OF EQUAL PROTECTION

Unequal access to crucial human enhancements can pose remarkably severe and important problems of unequal protection of the laws. We here realistically assume state action in the form of some tax or subsidy policy, government supported technological research, government hiring and contracting policies, government medical programs, control over health insurance, or otherwise.[190]

189. *See* PERRY, *supra* note 174, at 76.

190. As merely one possible form of the necessary state action, a government as employer may fulfill the Fourteenth Amendment state action requirement by preferring much more capable genetically or otherwise enhanced candidates for government employment over far less capable unenhanced such candidates. *Cf.* Wygant v. Jackson Bd. of Educ., 478 U.S. 1014 (1986) (equal protection violation in racially-based public

As a matter of basic equal protection law, there are three possible routes to likely judicial redress of the alleged denial of equal protection. The first requires that the plaintiff show a denial of equal protection of the laws with respect to a recognized fundamental right or interest of federal constitutional status.[191] The second route requires showing that the government has denied equal protection on historically suspect lines, such as race or ethnicity.[192] And occasionally, as a third route, an equal protection challenge can succeed if the court concludes that only constitutionally illegitimate purposes or justifications underlie the unequal treatment at issue.[193] None of these three routes, however, in their traditional forms seems ideally suited, without modification, to capture the essence of human enhancement equal protection problems.

Doubtless one or more of the three standard approaches, including especially the suspect classification approach,[194] and less clearly the constitutionally fundamental interest approach,[195] could be adapted to fit the problems of unequal human enhancements. The basic equal protection problems posed by unequal enhancements are, however, in a sense so obvious, severe, and direct as to bypass any practical need for

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school teacher layoff protection plan); Adarand Constructors, Inc. v. Pena, 515 U.S. 200 (1995) (imposing equal protection strict scrutiny in case of denial of government contract to non-disadvantaged business enterprises).

191. *See, e.g.*, Harper v. Virginia State Bd. of Elections, 383 U.S. 663 (1966) (recognizing voting in state elections as a fundamental right for equal protection purposes even though not expressly protected by the constitutional text).

192. *See, e.g.*, *Adarand*, 515 U.S. 200 (race-based presumptions in government programs as evoking strict scrutiny); Washington v. Davis, 426 U.S. 229 (1976) (but not without a showing of racial intent or a program reference to race).

193. *See, e.g.*, Dep't of Agric. v. Moreno, 413 U.S. 528 (1973) (unrelated individual in household food stamp rules as without any legitimate justification); City of Cleburne v. Cleburne Living Ctr., 473 U.S. 432 (1985) (special permit burdening of group home for mentally retarded persons invalidated under minimum equal protection scrutiny).

194. *See* the cases cited *supra* note 192 (requiring the promotion of a compelling or overridingly important public interest by the least constitutionally burdensome or most narrowly tailored means available). *See also* Grutter v. Bollinger, 539 U.S. 306 (2003) (upholding public law school affirmative action in admissions program).

195. *See supra* note 191. For related discussion, see Lawrence v. Texas, 123 S. Ct. 2472, 2484 (2003) (O'Connor, J., concurring in the judgment) (comparing equal protection and substantive due process-based approaches) (citing, *e.g.*, Eisenstadt v. Baird, 405 U.S. 438 (1972)). Of special interest for our purposes is Justice O'Connor's quotation of Justice Lewis Powell: "A legislative classification that threatens the creation of an underclass . . . cannot be reconciled with the Equal Protection Clause" (quoting Powell, J., concurring in Plyler v. Doe, 457 U.S. 202, 239 (1982)). *Lawrence*, 123 S. Ct. at 2487 (O'Connor, J., concurring).

any general mediating principles such as the three standard models noted above.[196]

At least as important as the choice among the standard equal protection models is a court's choice between formalism and a more substantively responsive approach to the constitutional problems of human enhancement. Formalistic approaches to equal protection can, in their place, be intellectually defensible, and they can in their own way be rigorous and extremely demanding. They can in a limited sense even be pragmatic when counting the costs of equality. Formalistic equal protection in our context, however, could easily lead to the disaster of merely ratifying trends that undermine the very idea of an integrated political society.

Among the well-known modern equal protection cases, the public school funding case of *San Antonio Independent School District v. Rodriguez*[197] stands out for its equal protection formalism. Arguably, *Rodriguez's* formalism descends into what we might call equal protection reductionism. The Court's formalism in *Rodriguez* does not mean that substance and practicality are in every respect ignored. Rather, there is a heightened substantive concern only for the costs of equality, as distinct from the logic and the favorable public consequences of equality.

The plaintiffs in *Rodriguez* sought the application of strict judicial scrutiny to a Texas public school funding system involving an overlay of redistributive transfers upon a local property tax-based funding system. The Supreme Court, dividing 5-4, rejected the application of equal protection strict scrutiny on both of two asserted grounds.[198] First, even if the plaintiff class could establish its disproportionate poverty, the Constitution does not recognize wealth and poverty as a suspect

196. It is not uncommon for scientists and philosophers to speak merely of fairness and justice in the allocation or distribution of the benefits of genetic science. The question of the appropriate level of equal protection scrutiny of the relevant government policy, on whatever theory, does not seem to naturally arise. Of course, some specification of what fairness requires must inescapably arise. *See, e.g.*, Colin Farrelly, *Genes and Justice: A Rawlsian Reply to Moore* 16 BIOETHICS 72, 73 (2002) ("governments must take the necessary steps to ensure that [genetic research] benefits are fairly distributed. And these steps might require limiting property or privacy rights"). Professor Ronald Dworkin seems to focus more centrally on the question of "leveling down" versus "leveling up" in the genetic engineering context than on equal protection scrutiny levels. *See* RONALD DWORKIN, SOVEREIGN VIRTUE: THE THEORY AND PRACTICE OF EQUALITY 440 (2000) ("[t]he remedy for injustice is redistribution, not denial of benefits to some with no corresponding gain to others").

197. 411 U.S. 1 (1973).

198. *See id.* at 44.

classification.[199] Nor was strict scrutiny equal protection available by characterizing a right to a public school education as a fundamental right for federal constitutional purposes.[200] The Court majority then went on to find the Texas school funding system rationally related to a legitimate public interest or purpose.[201] Thus the funding system did not violate the equal protection clause of the fourteenth amendment.[202]

There is certainly much of importance in the majority's discussion of these issues. But the Court's equal protection formalism—indeed, what we can call its reductionist formalism—is most clearly illustrated by the Court's discussion of what it took to be a prior, conceptual issue in this context. Specifically, the *Rodriguez* Court stopped to consider whether the denial of equal protection is best understood as the absolute[203] and complete denial of some benefit[204] made available to others, or else as a relative[205] and comparative matter, where some persons receive less of some benefit, and thus an unequal benefit, than do others.

The Court, at least for this particular context, opted for the former (absolute) as opposed to the latter (comparative) understanding of inequality and equal protection.[206] The Court concluded that "at least where wealth is involved, the Equal Protection Clause does not require absolute equality or precisely equal advantages."[207] The Court's focus, however, was not entirely on realistically excusing limited or small but indeterminate differences in educational quality.[208] The Court majority apparently placed weight on the fact that even economically poor students, or more accurately the students in the poorest districts, were

199. *See id.* at 33 ("in *Dandridge v. Williams*, . . . the Court's explicit recognition of the fact that the administration of public welfare assistance . . . involves the most basic economic needs of impoverished human beings . . . [and] the central importance of welfare benefits to the poor was not an adequate foundation for requiring the State to justify its law by showing some compelling state interest").

200. *Id.* at 30 ("the importance of a service performed by the State does not determine whether it must be regarded as fundamental for purposes of examination under the Equal Protection Clause").

201. *See Rodriguez*, 411 U.S. at 54-56.

202. *See id.* at 55.

203. *See id.* at 19.

204. As opposed to even the "absolute" denial of some possible portion of a benefit.

205. *See Rodriguez*, 411 U.S. at 19.

206. *See id.* at 23-24.

207. *Id.* at 24.

208. By contrast, compare the Court's rejection of such an approach in the context of congressional reapportioning and the necessary equality in size of congressional districts. *See* Karcher v. Daggett, 462 U.S. 725 (1983), discussed *infra* section V.

receiving some education, as opposed to being utterly and absolutely deprived of an education.[209] And beyond this, the plaintiff students were receiving an education deemed "adequate."[210]

Whatever we may think of the Court's realism in assessing the costs of the plaintiffs' desired remedies,[211] we can see the Court's approach as formalistic, and indeed reductionist, in assessing the logic of the plaintiffs' claims. Equality, as normally understood, inescapably includes a relative or comparative element underplayed by the *Rodriguez* majority.

Suppose we are doling out slices of pie. Suppose further that we wish to give everyone an equal size slice of this pie. Will this wish generally be fulfilled by giving everyone a slice varying substantially by recipient? Plainly it will not. People may differ in their need or appetite for pie, or even their ability to convert pie into energy. Equality can, in proper contexts, be mediated by differences in need or capacity to benefit, as in health insurance contexts. But there are no such corresponding concerns in the basic educational context of *Rodriguez*. In the basic education context, persons have not necessarily received an equal size slice even if each receives a substantial or for some purpose adequate size slice.

The directly comparative dimension of equality does not disappear if we substitute something complex, multi-dimensional, and intangible such as basic education—or doubly intangible, if we substitute basic educational opportunity—for easily distributable pie slices. Within limits, there is some room for debate over relationships between spending and real educational opportunities. In some contexts, it is possible that seeking to approach actual equality in the distribution of some good is unresponsive to features of persons or circumstances or is too morally costly to undertake.[212] But declining to pursue recognizably greater equality in the distribution of anything—including equality in educational opportunity—is not a defensible understanding of how to realistically pursue the equal protection of the laws.

More briefly, *Rodriguez* also famously adopts a formalistic view of equal protection—again, whether justifiably or not—in declining to

209. *See Rodriguez*, 411 U.S. at 23.

210. *Id.* at 24.

211. *See id.*

212. *See, e.g.*, Maxwell J. Mehlman, *The Law of Above Averages: Leveling the New Genetic Enhancement Playing Field*, 85 IOWA L. REV. 517, 544 (2000) (noting the argument from maintaining production incentives in favor of minimum, as distinguished from equal, provision).

recognize education[213] as among the interests that are impliedly fundamental for equal protection purposes.[214] For our own purposes, we need not argue crudely that the interests of the future unenhanced are so practically important that those interests should count as constitutionally fundamental. Rather, one might well argue that the interests of future unenhanced persons may well mark a dividing line between a reasonably well integrated civic polity, in which citizens are meaningfully peers, and the dramatic breakdown of the sort of society contemplated by the equal protection clause and by the Constitution itself.

By contrast with *Rodriguez's* reductionist formalism, consider what we may call the rigorist formalism of the reapportionment case of *Karcher v. Daggett*.[215] In *Karcher*, New Jersey argued that its congressional apportionment, newly revised in light of the most recent census, satisfied Article I, section 2 of the Constitution.[216] The maximum inequality among districts was said to be 0.7%,[217] in light of the inevitable census undercounts and other indeterminate departures from the ideal.[218]

The Court resolved this case by interpreting the language of the apportionment clause, which on its own terms admittedly makes no reference to equality of any sort.[219] But the apportionment clause has been interpreted to require "equal representation for equal numbers of

213. The Court was not required by the facts to decide whether a complete denial to the plaintiffs of all public schooling would implicate a constitutionally fundamental interest. Whether the Court could, or would want to, avoid this stronger inference we need not decide here.

214. *See* San Antonio Independent School District v. Rodriguez, 411 U.S. 1, 33-34 (1973) ("the key to discovering whether education is 'fundamental' is not to be found in comparisons of the relative societal significance of education. . . Nor is it to be found by weighing whether education is as important as the right to travel. Rather, the answer lies in assessing whether there is a right to education explicitly or implicitly guaranteed by the Constitution"). The right to vote in state elections was deemed preservative of one's other constitutional rights and thus at least partly on this basis itself constitutionally fundamental in *Harper v. Virginia Bd. of Elections*, 383 U.S. 663 (1966). And the existence of implied fundamental interests under the equal protection clause bearing upon one's own future offspring was recognized in *Skinner v. Oklahoma*, 316 U.S. 535 (1942), as cited by the Court in *Rodriguez*, 411 U.S. at 34.

215. 462 U.S. 725 (1983).

216. *See id.* at 727.

217. *See id.* at 732.

218. *See id.* at 731-32.

219. *See Karcher*, 462 U.S. at 729 n.2 (citing U.S. CONST. art. I, § 2).

people."[220] The equal protection standard of "one person, one vote" is of course quite similar.[221]

On essentially equal protection standards, then, the Court in *Karcher* interpreted Article I, section 2 to allow "only the limited population variances which are unavoidable despite a good-faith effort to achieve equality, or for which justification is shown."[222] The Court thus did not simply insist on some ideal standard with some specified departures from numerical equality being permitted. The Court's fear was that "[i]f state legislators knew that a certain *de minimus* level of population differences was acceptable, they would doubtless strive to achieve that level rather than equality."[223] The Court saw no principled way, if it accepted a 0.7% maximum inequality as *de minimus* and constitutionally trivial, to avoid similar claims for "0.8%, 0.95%, 1% or 1.1%."[224]

The formalism component in the Court's rigorously formalistic approach can be expressed in terms of what the judicial battle in *Karcher* seems genuinely to be about. There is of course not much real difference between adopting one numerical standard for a *de minimus* violation and adopting another very similar numerical standard. If the Court were to accept a 0.7% standard, it would have no better reason for rejecting a 0.8% standard than it would have for rejecting the voting rights claims of persons who are statutorily a month or a year too young to vote.

But would there be much genuine and substantive loss of equality if the Court had accepted a maximum inequality standard at some point lower than 0.7%? What would the real and substantive difference in equality of protection be with, say, a fixed maximum 0.3% *de minimus* standard? Again, the scope of what is considered a justified departure from some ideal, if inevitably somewhat inaccurate,[225] baseline of equality may expand or contract.[226] Is any significant egalitarian value really protected by the Court's approach in *Karcher*, and not by other, low *de minimus* approaches?

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220. *Id.* at 730 (quoting Wesberry v. Sanders, 376 U.S. 1, 18 (1964)).

221. *See id.* at 747 (Stevens, J., concurring) (citing the fourteenth amendment equal protection cases of Baker v. Carr, 369 U.S. 186 (1962); Reynolds v. Sims, 377 U.S. 533 (1964)).

222. *See Karcher*, 462 U.S. at 730.

223. *Id.* at 731.

224. *Id.* at 732.

225. *See id.*

226. *See Karcher*, 462 U.S. at 741.

While the *Rodriguez* school case in an important sense fails to come to terms with the substantive problem of obvious, almost palpable resource inequality at the constitutional level, *Karcher* focuses on issues nominally about inequality, but which are in practice trivial, and unlikely to make even a symbolic difference in ordinary lives. By way of further contrast, then, let us turn finally to the admittedly unusual case of *Plyler v. Doe*.[227]

Plyler involved an equal protection challenge to the denial of free basic public schooling to undocumented alien children present within the state of Texas.[228] Without passing judgment on the merits of the case, or even addressing its complexity,[229] we can see *Plyler* as an example of substantive realism in equal protection adjudication.

The *Plyler* Court began its analysis with the sort of equal protection boilerplate that verges on formalism, and which could not help realistically adjudicate the case of enhanced and unenhanced groups with diminishing commonalities. In accordance with long-established precedent, the *Plyler* Court solemnly insisted that "'all persons similarly circumstanced shall be treated alike.'"[230] Whether an undocumented alien six year old is similarly circumstanced with, say, a native born six year old of undocumented alien parents is arguably central to *Plyler*.

We must come to terms as well with the Court's further observation in *Plyler* that "'[t]he Constitution does not require things which are different in fact or opinion to be treated in law as though they were the same.'"[231] Just as the *Plyler* Court had to consider whether the above six year olds were "different in fact or opinion,"[232] so we must make an analogous judgment about relevant differences between the dramatically enhanced and the unenhanced.

Plyler's substantive realism is seen in its ability to take practical constitutional account of both the value of a basic education and the likely effects of an uneducated generation of undocumented residents of

227. 457 U.S. 202 (1982).

228. *See id.* at 219-20.

229. For a sampling of the discussions of this case, see Mark Tushnet, *Justice Lewis F. Powell and the Jurisprudence of Centrism*, 93 MICH. L. REV. 1854 (1995); Michael J. Perry, *Equal Protection, Judicial Activism, and the Intellectual Agenda of Constitutional Theory: Reflections On, and Beyond,* Plyler v. Doe, 44 U. PITT. L. REV. 329 (1983); Dennis J. Hutchinson, *More Substantive Equal Protection*, 1982 SUP. CT. REV. 167.

230. Plyler v. Doe, 457 U.S. 202, 216 (1982) (quoting F.S. Royster Guano Co. v. Virginia, 253 U.S. 412, 415 (1920)).

231. *Id.* (quoting Tigner v. Texas, 310 U.S. 141, 147 (1940)).

232. *Id.*

Texas. Having denied that education amounts to a fundamental constitutional right[233] and having rejected any special constitutional status for undocumented alien children,[234] the Court's ruling in favor of the plaintiffs required an unusually critical and aggressive review of the state's asserted legitimate interests. But that is not our concern herein.

Instead, we focus on the Court's realistic emphasis, first, on the practical value of education. Public education, the *Plyler* Court said, is not "merely some governmental 'benefit' indistinguishable from other forms of social welfare legislation."[235] The Court concluded, supposedly without changing *Rodriguez's* legal standard, that education has a fundamental role in maintaining the fabric of our society. We cannot ignore the significant social costs borne by our Nation when select groups are denied the means to absorb the values and skills upon which our social order rests.[236]

The value of education in this case was assessed by the *Plyler* majority not in a social vacuum, but realistically, in the context of "the specter of a permanent caste of undocumented resident aliens, encouraged by some to remain here as a source of cheap labor, but . . . denied the benefit . . . available to citizens and lawful residents."[237] Given these practical values and the social context, the *Plyler* Court concluded that it was "difficult to conceive of a rational justification for penalizing these children for their presence within the United States."[238]

More generally, and by the way of conclusion, it is the decisive substantive realism of *Plyler*, rather than the rigorous formalism of *Karcher*, let alone the formalistic reductionism of *Rodriguez*, that should commend itself in connection with the equal protection problems posed by classes or castes[239] of enhanced and unenhanced. There may well be differences between what is practically important and what is

233. *See id.* at 221.

234. *See Plyer*, 457 U.S. at 219 n.19.

235. *Id.* at 221.

236. *Id.* One of the benefits of the broad availability of education, promotion of advancement on the basis of what is taken to be individual merit, *id.* at 221-22, may or may not be of assistance to the future unenhanced.

237. *Plyer*, 457 U.S. at 218-19.

238. *Id.* at 220.

239. *See supra* note 237 and accompanying text. We should emphasize that even if the relevant castes are flawlessly defined, identifying which persons are fully or partially caste members may be more difficult in practice. *See* DOUGLAS RAE ET AL., INEQUALITIES 28 (1983).

constitutionally important.[240] But beyond some point, we risk turning the Constitution into a mere irrelevancy if we constitutionally stray too far from a focus on what genuinely matters for crucial civic, public, democratic purposes.

If any number of persons are, through no fault of their own, placed in a position of realistically insuperable caste-like inferiority,[241] with the gulf between groups and their economic productivity increasing over time, any formalistic approach to equal protection of the enhanced and unenhanced must at some point trivialize the historically hard-earned basic meanings of equal protection.[242]

What equal protection will specifically mean in the context of a gulf between enhanced and unenhanced persons may, at some precise level of detail, be left to the future. But generally, the threat of unbridgeable and severe overall social divisions[243] would plainly require some commensurate legally-enforced redistribution of economic assets and opportunities in some appropriate and otherwise morally unobjectionable combination of well-directed taxes, subsidies, regulations, insurance, and other programs.

Whatever we think of various forms of human enhancement, on various moral grounds,[244] there is certainly no need to sabotage or otherwise directly impair any enhanced person for the sake of equal protection. Equal protection does not require gruesome government intrusions upon competent persons.[245] Redistribution from, primarily,

240. One could argue, for example, that particularly when read in light of the Fifth Amendment taking power, the Constitution's Third Amendment reassurances against the garrisoning of troops in one's home under specified circumstances has over time faded in its practical significance.

241. *See supra* section III.

242. *See generally* JACOBUS TEN BROEK, EQUAL UNDER LAW (1965); Slaughter-House Cases, 83 U.S. 36, 37 (1872) ("the main purpose of [amendments 13-15] was the freedom of the African race, the security and perpetuation of that freedom and their protection from the oppressions of the white men who had formerly held them in slavery").

243. *See supra* Section II.

244. *See* Michael Sandel, *The Case Against Perfection*, 291 ATLANTIC MONTHLY 51 (April, 2004); JURGEN HABERMAS, THE FUTURE OF HUMAN NATURE 61 (2003). Certainly our use of the term 'enhancements' is not meant to prejudge questions of autonomy, genuine improvement, familial morality, arrogance, hubris, or unwitting self-degradation.

245. Thus the practical irrelevance, whatever its heuristic value, of Robert Nozick's thought experiments on equalization through the direct redistribution of actual vital body parts. *See* ROBERT NOZICK, ANARCHY, STATE & UTOPIA 206 (1974). For discussion, *see, e.g.*, Radhika Rao, *Property, Privacy and the Human Body*, 80 B.U. L.

the well-off can certainly take less objectionable forms. And we should remember that it will often be possible to level up, rather than merely to level down.[246]

Of course, while equal protection is a constitutional right, equal protection cannot by itself guarantee maximum well-being for those who are among the least economically well-off. The society that most fully respects the equal protection of the laws may not be the richest society. It is possible that respecting the equal protection of the laws can prevent the poor from becoming in some sense absolutely better off through sharing, at some modest rate, in the increasingly greater rewards available to the well off.[247] Equal protection cannot always guarantee efficiency in wealth production such that the poor are always the best off they could be in absolute terms.

But it is not for nothing that equal protection is enshrined as a basic constitutional right. It is doubtful that many valued forms of political and social liberty could meaningfully survive its abandonment.[248] Certainly our sense of commonality of fate, of constituting a polity in any genuine sense, requires our taking a substantively realistic approach to equal protection in the specific context of the various sorts of human enhancements.

This conclusion does not depend upon exotic speculation about the possible development of actual subspecies of the human. The need for a substantively realistic approach to equal protection in the future enhancements context has much more familiar foundations. As the English philosopher John Wilson has pointed out, "'[t]reating people as

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REV. 359, 447-48 & 447 n.448 (2000); Samuel Scheffler, *Prerogatives Without Restrictions*, 6 PHIL. PERSP. 377, 381 (1992) (costs of actual surrender).

246. *See, e.g.*, RONALD DWORKIN, SOVEREIGN VIRTUE: THE THEORY AND PRACTICE OF EQUALITY 440 (2000); Pamela Karlan, *Equal Protection, Due Process and the Stereoscopic Fourteenth Amendment*, 33 MCGEORGE L. REV. 473, 491 (2002) (applying the distinction in the context of the Harper voting rights/poll tax case, 383 U.S. at 670).

247. *See* the various tradeoffs explored at length in LARRY S. TEMKIN, INEQUALITY 245 (Oxford Univ. Press 1993); DOUGLAS RAE ET AL., INEQUALITIES 129 (1983) (more broadly, "equality . . . is as well pleased by graveyards as by vineyards"); THE PRESIDENT'S COUNCIL ON BIOETHICS, BEYOND THERAPY: BIOTECHNOLOGY AND THE PURSUIT OF HAPPINESS ch. 6, § (c), *available at* http://www.bioethics.gov/reports/beyondtherapy/chapter6.html (10/21/2003); Roger Crisp, *Equality, Priority and Compassion*, 113 ETHICS 745, 746 (2003) (discussing the "leveling down" objection).

248. This is not to suggest that there can never be any tradeoffs between meaningful equal protection and other basic broadly liberal values. These tradeoffs were a recurring theme in the work of Sir Isaiah Berlin, on which see the discussions in ISAIAH BERLIN, LIBERTY 180 n.1, 200-01, 278-79 (Henry Hardy ed., 2002); THE LEGACY OF ISAIAH BERLIN pt. II, at 73-139 (Mark Lilla et al. eds., 2001).

equals' is . . . the description of a skeleton of a particular way of life, whose flesh is made up of the content of other concepts, in particular those of fraternity, communication, and love . . . as well as for the less substantial concepts of liberty, democracy, [and] justice."[249]

Let us conclude, then, with a brief look at the special and distinctive problem of equal protection between different generations of persons in the context of human enhancements.[250] Asking each current generation to save and invest at a reasonable rate for the sake of future generations does not generally disturb us, even though we assume that the future beneficiaries of our present sacrifices will be absolutely better off than we are. To some degree, we identify with descendants in at least the next few future generations. We see cultural development as requiring some investment now that will largely benefit those we hope will be better off. And we expect future generations to in turn do their part, even if they can neither help nor hinder us.

How might future human enhancements change this? The writer Gregory Stock argues that "if germline technology can bring meaningful enhancement, the greatest divisions will not be between rich and poor [in any single generation] but between generations."[251] To a degree, this has long been true. The creature comforts and medical technology available to Louis XIV were inferior to those routinely available to many citizens in advanced contemporary societies. Nor is it clear that future unenhanced persons will have more in common with their third- or fourth-generation enhanced contemporaries than those enhanced contemporaries will have with even later enhanced generations. This would seem to depend upon the pace of advancement, changes over time in that pace, cumulative and synergistic effects, the compounding of advantage, and other current imponderables.

What does seem clear is that if there develops a typically unbridgeable gulf separating groups of contemporaries, we must adopt a substantively realistic understanding of equal protection that involves significant resource and opportunity transfers, mainly from the privileged to the crucially deprived. To this, the only alternative is an understanding of the equal protection clause reducing that clause to meaninglessness, and to a mockery of its historic origins.

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249. JOHN WILSON, EQUALITY 153 (1966).

250. For a less narrowly focused discussion, see R. George Wright, *The Interests of Posterity in the Constitutional Scheme*, 59 U. CIN. L. REV. 113 (1990).

251. GREGORY STOCK, REDESIGNING HUMANS: CHOOSING OUR GENES, CHANGING OUR FUTURE 144 (2003).